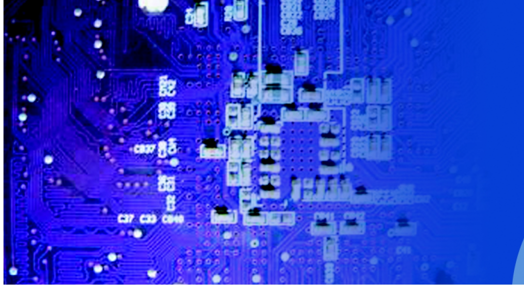
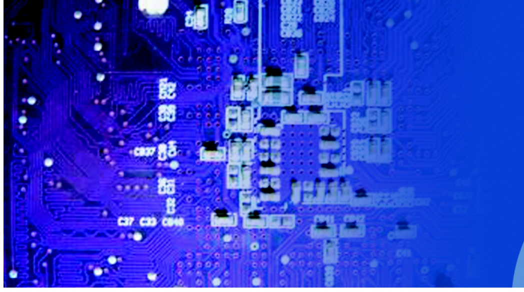


RMC 7150

14” short depth rack server

User Manual

RMC 7150: 14” short depth server with two Intel Xeon processors



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California Best Management Practices Regulations for Perchlorate Materials.

This manual is written for professional system integrators and PC technicials. It provides information for the installation and use of the RMC 7150. Installation and maintenance should be performed by experienced technicians only.

The RMC 7150 is a 1U rackmount server. Please refer to our website for updates on supported processors.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the RMC 7150 and its chassis.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the RMC 7150 into a rack and check out the server configuration prior to powering up the system. If your server was ordered without the processor and memory components, this chapter will refer you to the apporopriate sections of the manual for their installation.

Chapter 3: System Interface

Refer to this chapter for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the RMC 7150.

Chapter 5: Advanced Setup

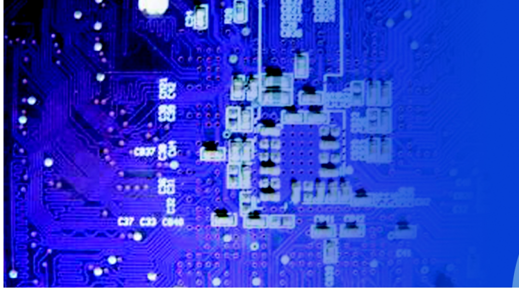
Chapter 5 provides detailed information on the RMC 7150, including the locations and functions of connectors, headers and jumoers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the server.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the RMC 7150 chassis. YOu should follow the procedures given in this chapter when installing, removing or reconfiguring Serial ATA or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

The BIOS chapter includes an introdcution to BIOS and provides detailed information on running the CMOS Setup Utility.



CHAPTER 1

1.1 Overview

The Acnodes Crop RMC 7150 is a 1U rackmount server designed for optimal space efficiency. It is comprised of two main subsystems: the RMC 7150 1U chassis and the serverboard. Please refer to our web site for information on operating systems that have been certified for use.

In addition to the mainboard and chassis, various harware components may have been included with the RMC 7150, as listed below:

- Two CPU heatsink

- Four (4) 4-cm fans

- One (1) air shroud

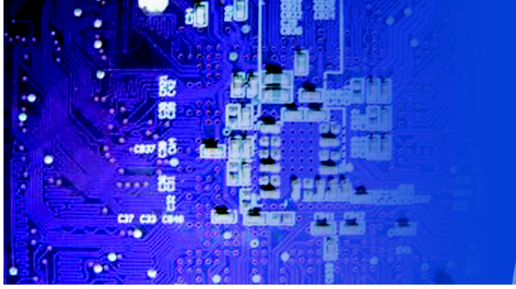
- SATA Accessories:
    - One (1) Internal SATA backplane
    - One (1) set of SATA cables
    - One (1) SGPIO cable
    - Four (4) SATA drive carriers

- One (1) PCI-E x 8 slot riser card

- RMC 7150’s manual

Optional:

- Rackmount kit



1.2 Serverboard Features

It is a dual processor serverboard based upon Intel’s 5500 +ICH10R chipset. Below are the main features of the processor.

Processor
It supports a single or dual two Intel 5500 Series processors in LGA1366 sockets.

Memory
Slots can support up to 24 GB of ECC.

Serial ATA
An on chip SATA controller is integrated to provide a six-port, 3Gb/sec SATA subsystem, which is RAID 0, 1, 5 and 10 supported. The SATA drives are hot-swappable units.

Backpanel Ports
Onboard I/O backpanel ports include one COM port, a VGA port, two USB ports, PS/2 mouse and keyboard ports and two GIgabit LAN (NIC) ports. A UID button is also included on the backpanel.

Other Features
Other onboard features that promote system health include voltage monitors, a chassis intrusion header, auto-switching voltage regulators, chassis and CPU overhear sensors, virus protection and BIOS rescue.

1.3 Server Chassis Features

The RMC 7150 is built on a 1U rackmount server chassis. The following is a general outlind of the main features of the RMC 7150 chassis.

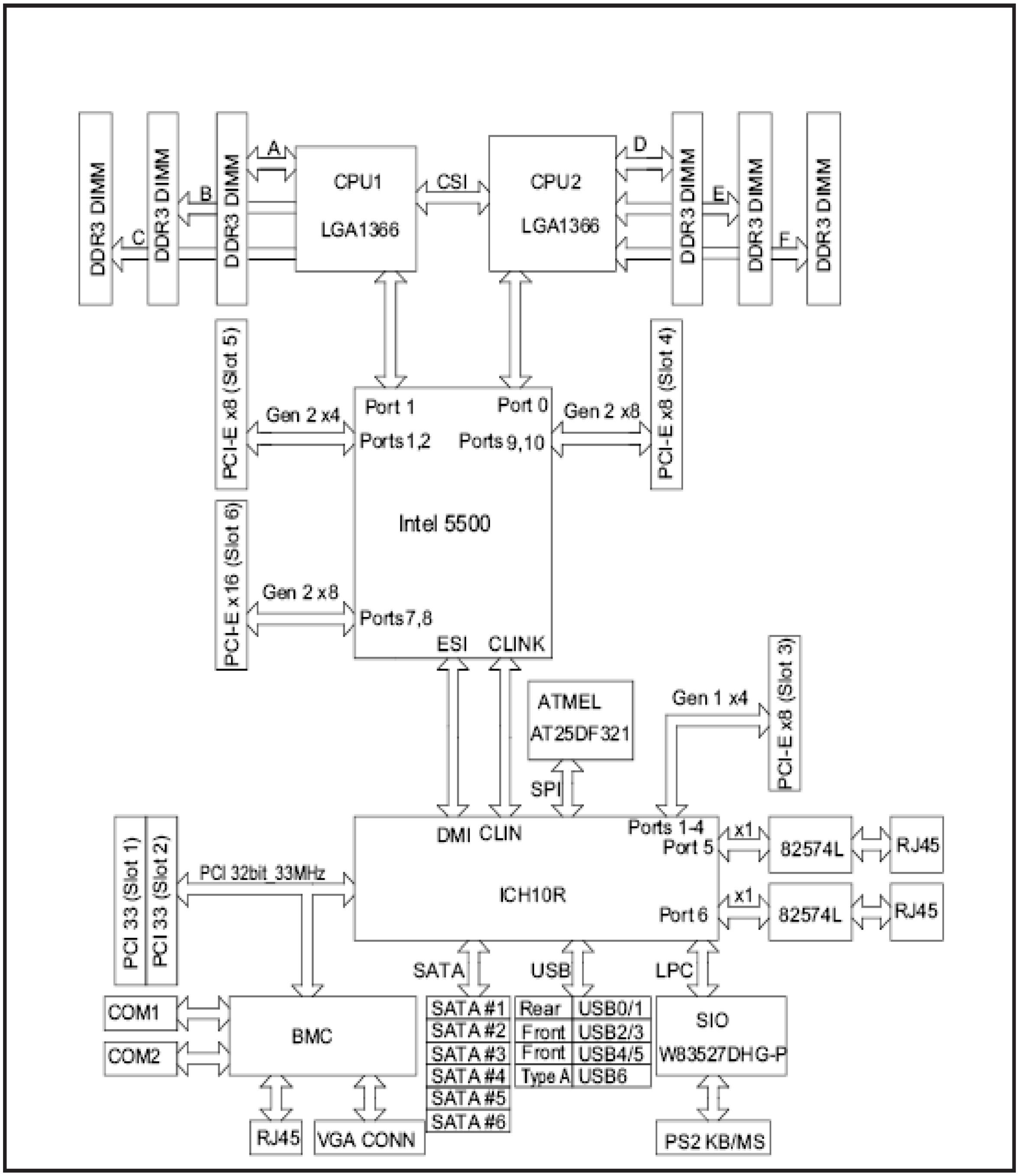
System Power
When configured as the RMC 7150, the chassis features a single power supply.

Serial ATA Subsystem
The RMC 7150 chassis is designed to support one internal SATA hard drive. The internal drive is not hot swappable.

Control Panel
The RMC 7150’s control panel provides important system monitoring and control information. LEDs indicate power on, network activity, hard disk drive activity, overheat warning and fan failure. The control panel also includes a main power button and a reset button.

Rear I/O Panel
The rear I/O panel on the chassis provides one PCI expansion card slot, one COM port (another ins internal), two USB ports, PS/2 mouse and keyboard ports, a VGA (graphics) ports and two Gb Ethernet ports.

Cooling System
The RMC 7150 chassis has an innovative cooling design that features an air shroud and three 4-cm counter-rotating fans with user-defined fan speed control. (Fan speed may defined with a BIOS setting.)


DDR3 DIMM
DDR3 DIMM
DDR3 DIMM
A
B
C
CPU1
LGA1366
CSI
CPU2
LGA1366
D
E
F
DDR3 DIMM
DDR3 DIMM
DDR3 DIMM
PCI-E x8 (Slot 5)
Gen 2 x4
Port 1
Ports 1,2
Port 0
Ports 9,10
Gen 2 x8
PCI-E x8 (Slot 4)
Intel 5500
PCI-E x16 (Slot 6)
Gen 2 x8
Ports 7,8
ESI
CLINK
ATMEL
AT25DF321
SPI
Gen 1 x4
PCI-E x8 (Slot 3)
PCI 33 (Slot 1)
PCI 33 (Slot 2)
PCI 32bit_33MHz
DMI
CLIN
ICH10R
Ports 1-4
Port 5
Port 6
x1
x1
82574L
82574L
RJ45
RJ45
SATA
USB
LPC
COM1
COM2
BMC
SATA #1
SATA #2
SATA #3
SATA #4
SATA #5
SATA #6
Rear
Front
Front
Type A
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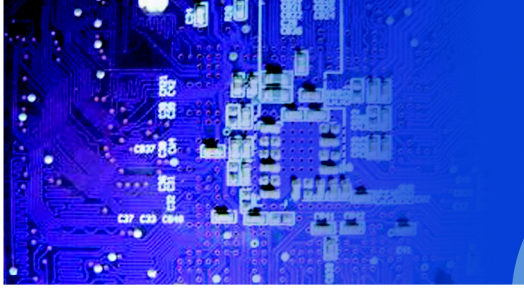
USB6
SIO
W83527DHG-P
RJ45
VGA CONN
PS2 KB/MS



1.4 Contacting Acnodes

HEADQUARTERS

Address:	Acnodes Corp. 661 Brea Canyon Rd. Walnut, CA 91789
Tel:	(909) 598-7388
Fax:	(909) 598-0218
Email:	info@acnodes.com
Website:	www.acnodes.com

CHAPTER 2

2.1 Overview

This chapter provides a quick setup checklist to get your RMC 7150 up and running. FOllowing the steps in the order given should enable you to have the system operational within a minimal amount of time. This quick setup assumes that your system has come to you with the processor and memory preinstalled. If your system is not already fully integrated with a serverboard, processor, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2.2 Unpacking the System

You should inspect the box the server was shipped in and note if it was damaged in any way. If the server itself shows damage, you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the server. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical nose and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Read the rack and server precations in the next section.

2.2 Preparing for Setup

The RMC 7150 does not ship with a rack rail hardware package as the system can be rack mounted without the use of rails. An optional rack rail package is available if you wish to order from Acnodes. Follow the steps in the order given to complete the installation process in a minimal amount of time. Please read this section in its entirety before you begin the installation procdeure outlined in the sections that follow.

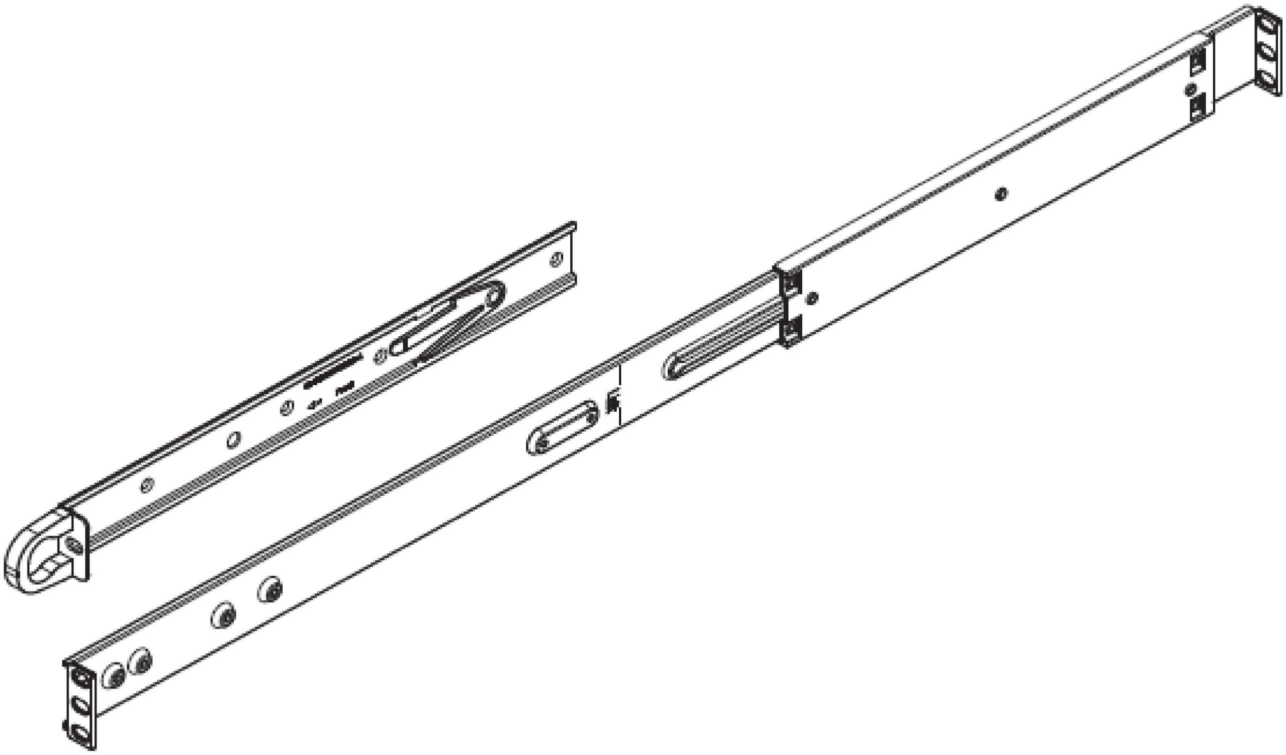
2.4 Installing the System into a Rack

This section provdes information on installing the RMC 7150 into a rack unit. If the sysetm has already been mounted into a rack, you can skip ahead to sections 2-5 and 2-6.

Basic Installation Procedure

The RMC 7150 server comes with two rack mounting brackets, which are located on each side at the front of the chassis. To mount the system into a rack, simply screw these brackets directly to the front of the rack (two screws for each bracket). As figure 2-1 shows. The brackets can be located at the front of the chassis or moved approximately one-third to the rear of the chassis.

Figure 2-1. Identifying the Sections of the Rack Rails



Installing with Rackmount Kit

This is a guideline for installing the unit into a rack with the optional rack kit. You should also refer to the Installation Instructions that came with the rack unit you are using. Be aware that there are a variety of rack units on the market, which may mean the assembly procedure will differ slightly.

The rack harware includes two assblies that consists of two sections: an Inner rail that secures to the chassis and an outer rail that secures directly to the rack itself.

Installing the Chassis Rails

1. Detatch the two rail sections from each other by depressing the locking tab on the innter rail to release it from its locked position, then pull the two rails completely apart.

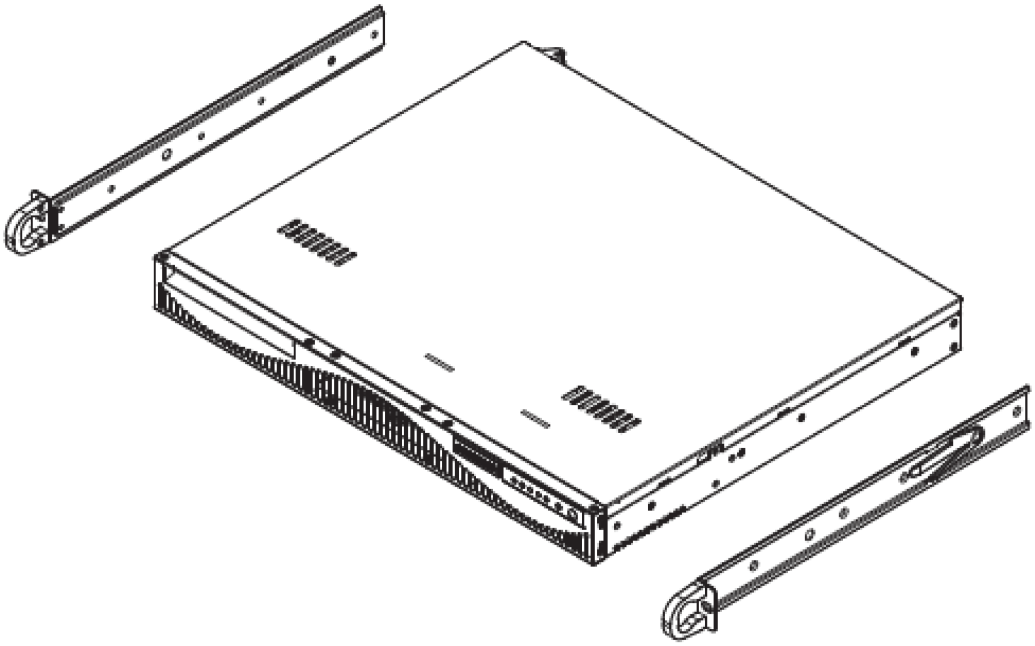
2. Repeat step 1 for the remaining rail assemble.

3. Position the fixed chassis rail sections you just removed along the side of the chassis making sure the three screw holes line up. Noe that the rails are left/right side specific.

4. Screw the rail securely to the side of the chassis. Repeat this procedure for the other rail on the other side of the chassis. You will also need to attatch the rail brackets when installing into a telco rack.

Locking Tabs: Both chassis rails have a locking tab, which serves two functions. This first is to lock the server into place when installed and pushed fully into the rack, which is its normal position. Secondly, these tabls also lock the server in place when fully extended from the rack. This prevents the server from coming completely out of the rack when you pull it out for servicing.

Figure 2-2. Installing Chassis Rails



2.1 USB 1/2 Connector

1. Determine where you want to place the RMC 7150 in the rack.

2. Position the fixed rack rail/sliding rail guide assemblies at the desired location in the rack, keeping the sliding rail guide facing the inside of the rack.

3. Screw the assembly securely to the rack using the brackets provided.

4. Attatch the other assemble to the other side of the rack, making sure that both are at the exact same height and with the rail guides facing inward.

Installing the Server into the Rack

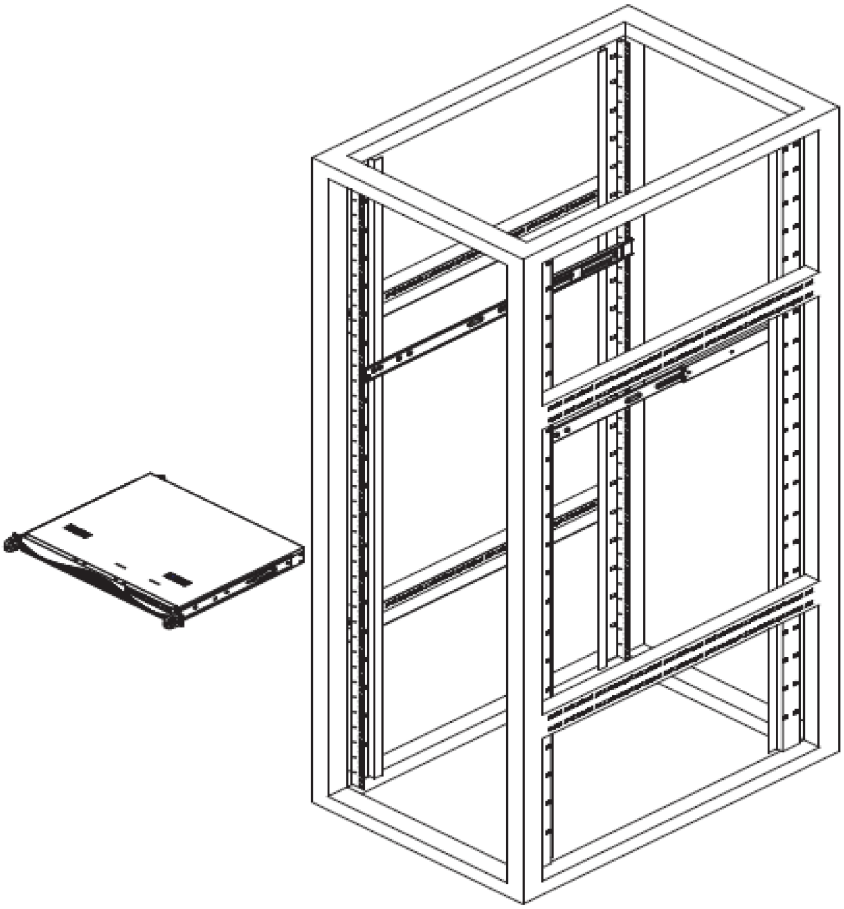
You should now have rails attatched to both the chassis and the rack unit. The next step is to install the server into the rack.

1. Line up the rear of the chassis rails with the front of the rack rails.

2. Slide the chassis rails into the rack rails, keeping the pressure even on both sides. See Figure 2-3.

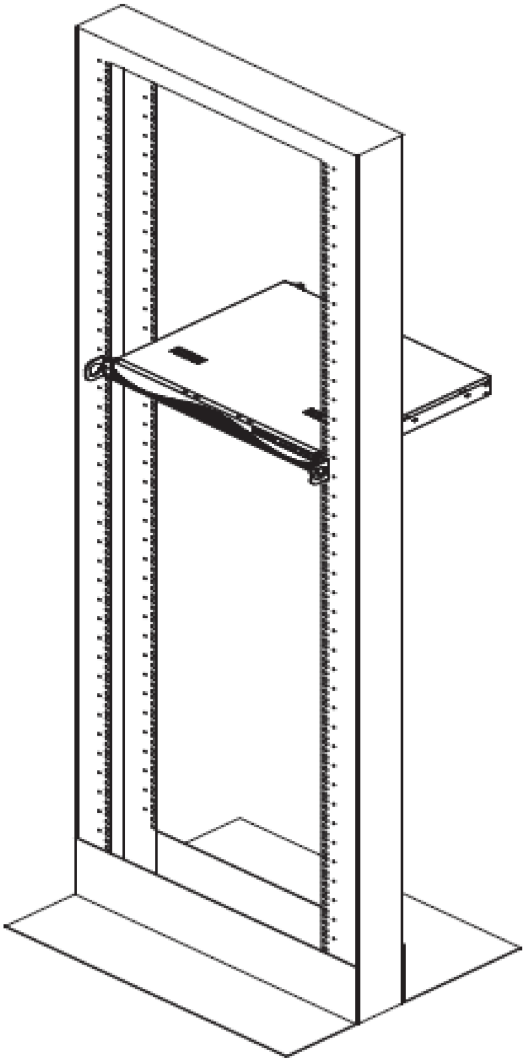
3. When the server has been pushed completely into the rack, you should hear the locking tabs “click.”

4. Finish by inserting and tightening the thumbscrews that hold the front of the server to the rack.



Installing the Server into a Telco Rack

If you are installing the RMC 7150 into a Telco type rack, follow the directions given on the previous pages for rack installation. The only difference in the installation procedure will be the positioning of the rack brackets to the rack. They should be spaced apart just enough to accomodate the width of the telco rack.



2.5 Checking the Serverboard Setup

After you install the server in the rack, you will need to open the unit to make sure the serverboard is properly installed and all the connections have been made.

Removing the Chassis Cover

1. Release the retention screws that secure the unit to the rack.

2. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a “click”)

3. Remove the screws from the rear lip of the chassis cover (See figure 2-5)

4. Release the top cover by pushing it away from you until it stops. You can then lift the top cover from the chassis to gain full acccess to the inside of the server.

Checking the Components

1. You may have processors already installed in the serverboard. Each processor should have its ownheatsink attatched.

2. The RMC 7150 server may have come with the system memory already installed. Make sure all DIMMs are fully seated in their slots.

3. If desired, you can install an add-on card to the system.

4. Make sure all power and data cables are properly connected and not blocking the airflow.

2.6 Checking the Drive Bay Setup

1. For servicing the SATA and DVD-ROM drives, you will need to remove the top chassis cover. The SATA disk drive is located at the front of the chassis’ interior.

2. Refer to Chapter 6 if you need to reinstall a DVD-ROM drive to the system.

3. Depending upon your system’s configuration, your system may have a SATA hard drive already installaed. If you need to install a SATA hard drive, please refer to the appropriate section in Chapter 6.

Checking the Airflow

1. Airflow is provided sets of 4-cm counter-rotating fans. The system component layout was carefully designed to promote suffiecient airflow through the small 1U rackmount space.

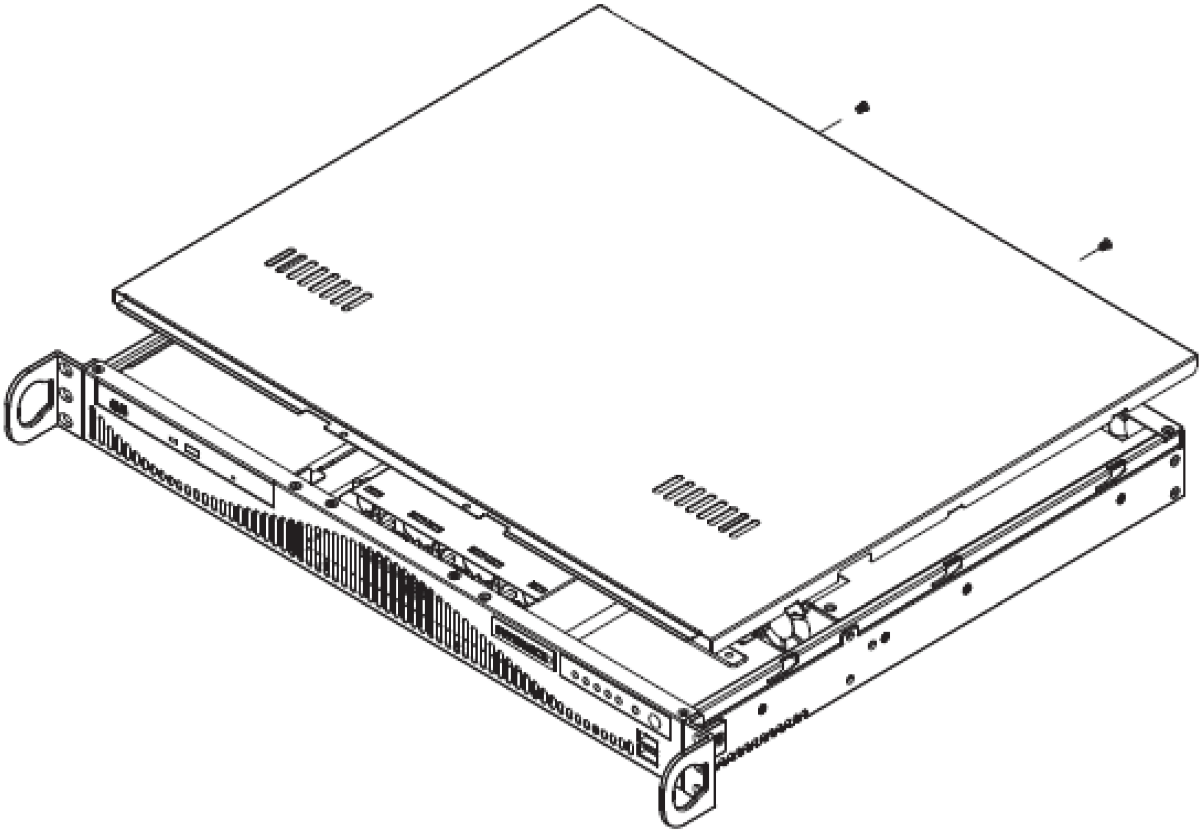
2. Also note that all power and dataa cables have been routed in such a way that they do not block the airflow generated by the fan.

Providing Power

1. The Ist thing you must do is to provide input power to the system. Plug the power cord from the power supply unit into a high-quality power strp that offers protection from electrical noise and power surges.

2. Finish by pushing the power button on the control panel to power up the system.

Figure 2-6. Accessing the Inside of the Server



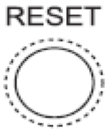
CHAPTER 3 SYSTEM INTERFACE

3.1 Overview

There are several LEDs on the control panel to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. There are also two buttons on the chassis control panel. This chapter explains the meanings of all LED indicators and the appropriate respnse you may need to take.

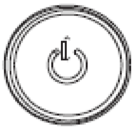
3.2 Control Panel Buttons

There are two push buttons located on the front of the chassis: a reset button and a power on/offbutton.



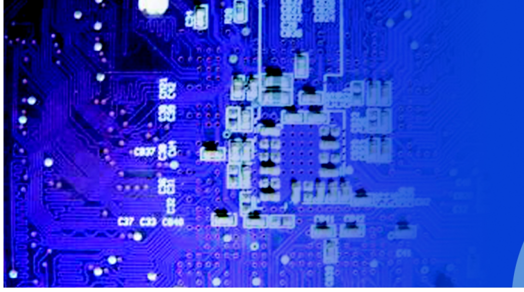
Reset

The reset switch reboots the system



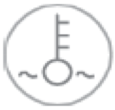
Power

This is the main power switch, which is used to apply or turn off the main system power. Turning off system power with this button removes the main power but keeps the standby power supplied to the system.



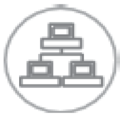
3.3 Control Panel LEDs

The control panel located on the front of the RMC 7150 chassis has five LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.



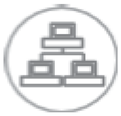
Overheat/Fan Fail

When this LED flashes it indicates a fan failure. When on continiously (on and not flashing) it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. Check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly. This LED will remain flashing or on as long as the overheat condition exists.



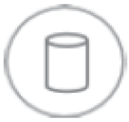
NIC2

Indicates network activity on LAN2 when flashing.



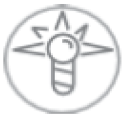
NIC1

Indicates network activity on LAN1 when flashing.



HDD

Channel activity for HDDs. This light indicates IDE drive activity when flashing.



Power

Indicates power is being supplied to the system’s power supply units. This LED should normally be illuminated when the system is operating.

CHAPTER 4 SYSTEM SAFETY

4.1 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the RMC 7150 damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power on/off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.
- Do not work alone when working with high voltage components.
- Power should always be disconnected from the system when removing or installing main system components, such as the serverboard, memory modules and floppy drive. When disconnecting power, you should first power down the system with the operating system first and then unplug the power cords of all the power supply units in the system.
- AWhen working around exposed electrical circuits, another person who is familiar with the power-off controls should be neaerby to switch off the power if necessary.
- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.
- Do not use mats designed to decrease static electrical discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.
- The power supply power cords must include a grounding plug and must be plugged into grounded electrical outlets.
- This product may be connected to an IT power system. In all cases, make sure that the unit is also relably connected to Earth.
- Serverboard Battery: CAUTION - There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarities. This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.
- DVD-ROM Laser: CAUTION - This server may have come equipped with a DVD-ROM drive. To prevent direct exposure to the laser beam and haardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.
- Mainboard replaceable soldered-in fuses: Self-resetting PTC (Positive Temperature Coefficient) fuses on the mainboard must be replaced by trained service technicians only. The new fuse must be the same or equicalent service technicians only. The new fuse must be the same or equivalend as the one replaced. Contact technical support for details and support.

4.2 General Safety Precautions

Follow these rules to ensure general safety:

- Keep the area around the RMC 7150 and free of clutter.
- The RMC 7150 weighs approximately 18 lbs. when fullyloaded. When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs.
- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.
- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.
- After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

CHAPTER 4 SYSTEM SAFETY

4.3 ESD Precautions

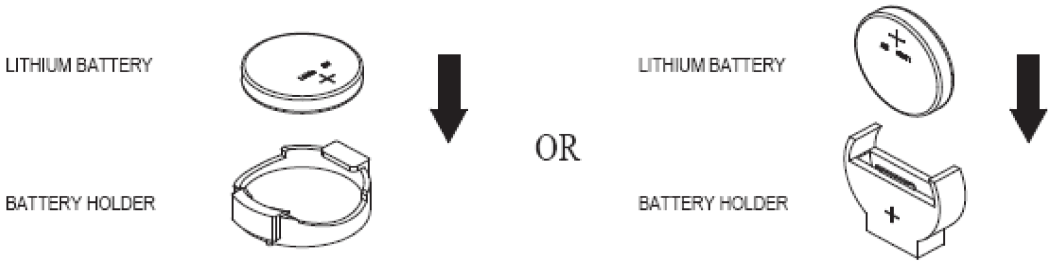
Electrostatic Discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit baords (PCDs) in their antistatic bag.
- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard and peripherals back into their antistatic bags when not in use.
- For grouding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

4-4 Operating Precautions

Care must be taken to assure that the chassis cover is in place when it is operating to assure proper cooling. Out of warranty damage to the system can occur if this practice is not strictly followed.

Figure 4-1. Installing the Onboard Battery



CHAPTER 5 ADVANCED SERVERBOARD SETUP

This chapter covers the steps required to install the serverboard into the chassis. Connect the data and power cables and install add-on cards. All serverboard jumper and connections are also described. A layout and quick reference chart are included in this chapter for your reference. Remember to completely close the chassis when you have finished working with the serverboard to better cool and protect the system.

5.1 Handling the Serverboard

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs). It is important to handle them very carefully. To prevent the serverboard from bending, keep one hand under the center of the board to support it when handling. The following measure are generally sufficient to protect your equipment from electric static change.

Precautions

- Use a grounded wrist wrap strap designed to prevent ESD.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Unpacking

The serverboard is shipped in antistatic packaging to avoid electrical static discharge. When unpacking the board make sure the person handling it is static protected.

5.2 Server Installation

This section explains the first step of physically mounting it into the chassis. Following the steps in the order given will eliminate most common problems encountered in such an installation. To remove the serverboard, follow the procedure in reverse order.

Installing to the Chassis

1. Remove the screws from the rear lip of the chassis cover.

2. Release the top cover by pushing it away from you until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server.

3. Make sure that the I/O ports on the serverboard align properly with their respective holes in the I/O shield at the back of the chassis.

4. Carefully mount the serverboard to the serverboard tray by aligning the board holes with the raised metal standoffs that are visible to the chassis.

5. Insert screws into all the mounting holes on your serverboard that line up with the standoffs and tighten until snug.

5.3 Connecting Cables

Now that the serverboard is installed, the next step is to connect the cables to the board. These include the data cables for the peripherals and control panel and the power cables.

Connecting Data Cables

The cables used to transfer data from the peripheral devices have been carefully routed to prevent them from blocking the flow of cooling air that moves through the system from the back. If you need to disconnect any of these cables, you should take care to keep them routed as they were originally after reconnecting them.

The following data cables should be connected.

- DVD-ROM cable
- SATA drive cables
- Control Panel cable

Connecting Power Cables

It has a 24-pin primary power supply connector for connection to the ATX power supply. In addition, there are two 8-pin processor connectors that also must be connected to your power supply.

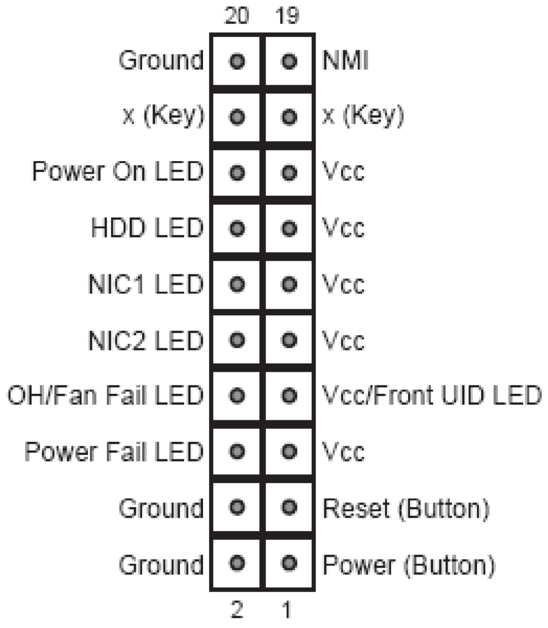
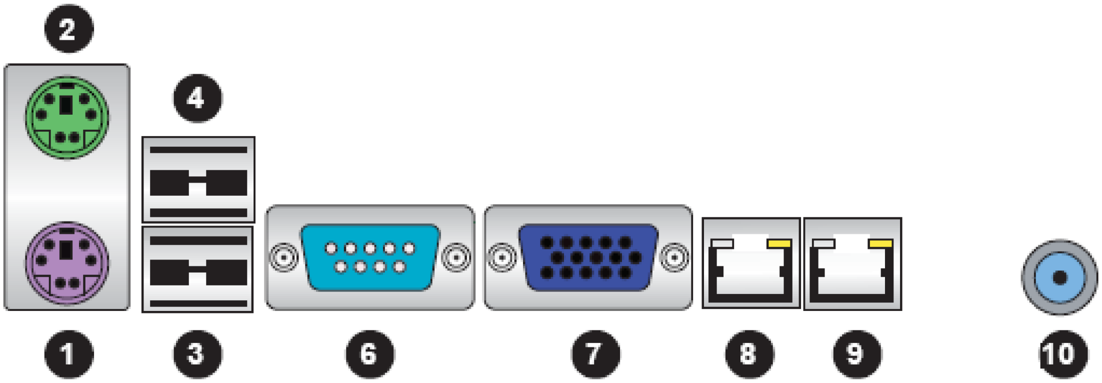


Figure 5-1. Control Panel Header Pins
20
19
Ground
NMI
x (Key)
x (Key)
Power On LED
Vcc
HDD LED
Vcc
NIC1 LED
Vcc
NIC2 LED
Vcc
OH/Fan Fail LED
Vcc/Front UID LED
Power Fail LED
Vcc
Ground
Reset (Button)
Ground
Power (Button)
2
1

5.4 Rear I/O Ports

The I/O ports are color coded in conformance with the PC 99 specification.

Figure 5-2. Rear I/O Ports



Rear I/O Ports	
1. Keyboard	6. COM1
2. PS/2 Mouse	7. VGA Port
3. USB0	8. LAN1
4. USB1	9. LAN2
5. IPMI LAN	10. UID Button

5.5 Installing the Processor and Heatsink

When handling the processor package, acoide placing direct pressure on the label area of the fan.

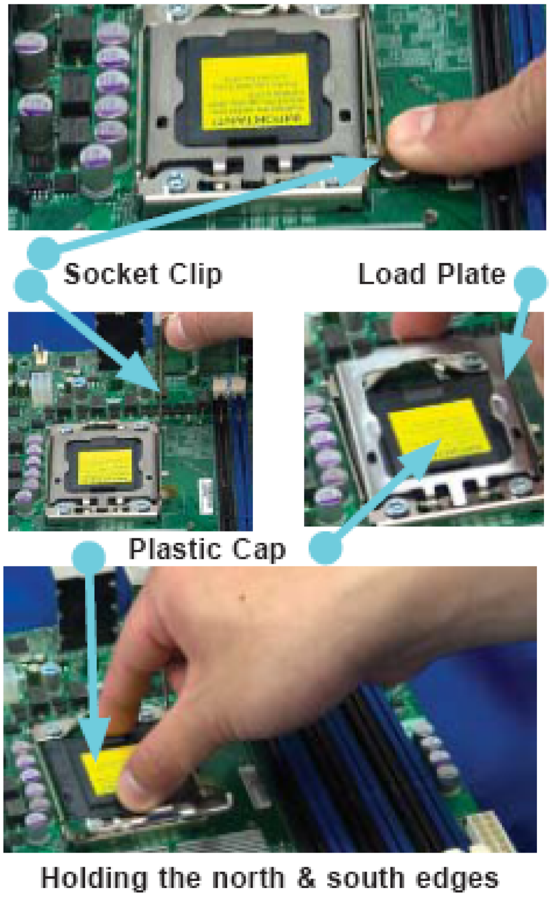
Notes:

- Always connect the power cord last and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.
- If you buy a CPU separately, make sure that you use an Intel-certified multi-directional heatsink only.
- Make sure you install the serverboard into the chassis before you install the CPU heatsinks.
- When receiving a serverboard without a processor pre-installed, make sure that the plastic CPU socket cap is in place and non of the socket pins are bent; otherwise, contact your retailer immediately.
- Refer to the Acnode web site for updates on CPU support.

1. Press the socket clip to release the load plate, which covers the CPU socket, from its locked position.

2. Gently lift the socket clip to open the load plate.

3. Hold the plastic cap at its north and south center edges to remove it from the CPU socket.



1. After removing the plastic cap, use your thumb and the index finger to hold the CPU at the north and south center edges.

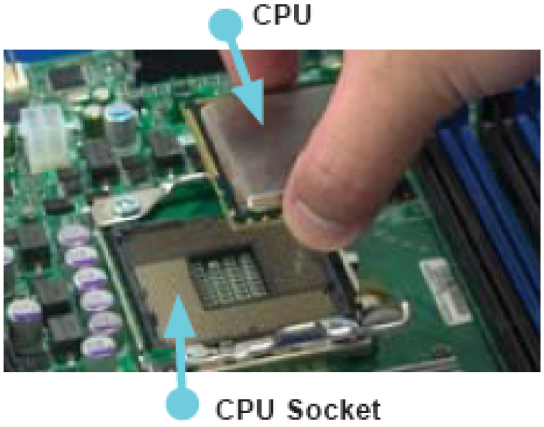
2. Align the CPU key (the semi-circle cutout) with the socket key (the notch below the gold color dot on the side of the socket).

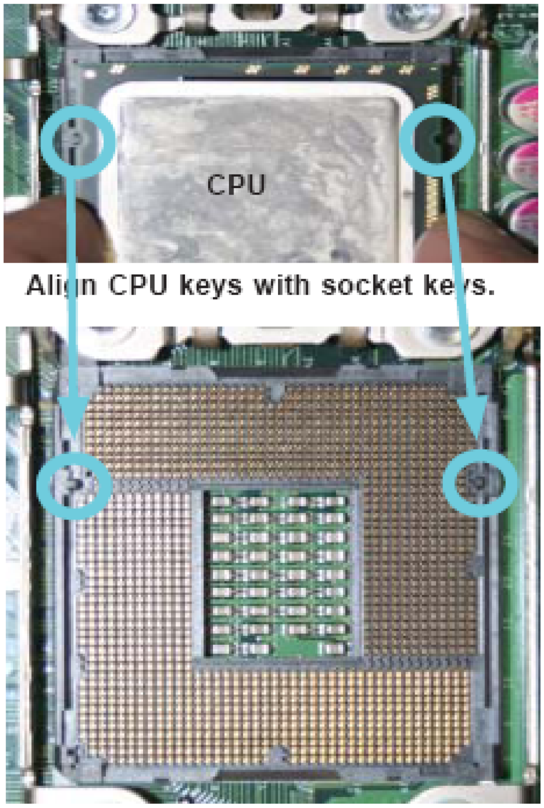
3. once the CPU and the socket are aligned, carefully lower the CPU straight down into the socket. Do not rub the CPU against the surface of the socket or its pins to avoid damaging the CPU or the socket.

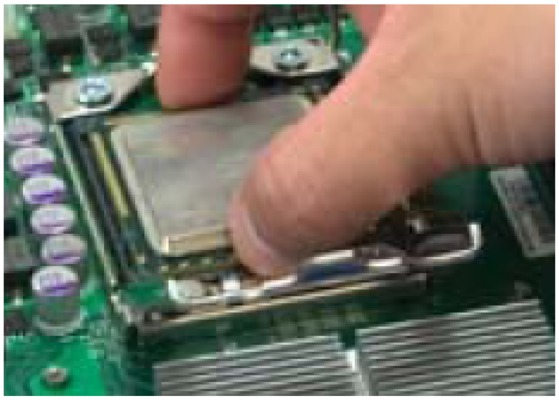
4. With the CPU in the socket, inspect the four corners of the CPU to make sure that it sits level and is properly installed.

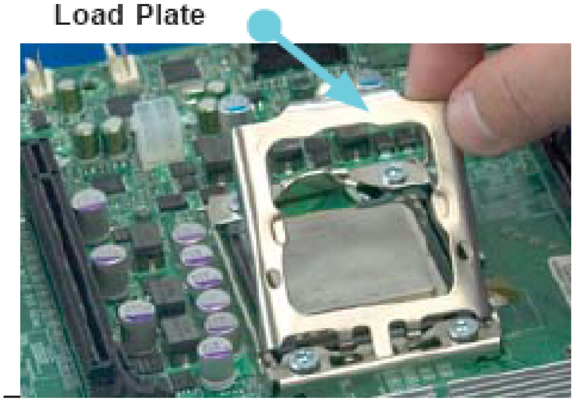
5. Once the CPU is securely seated in the socket, lower the CPU load plate to the socket.

6. Use your thumb to gently push the socket slip down to the clip lock.







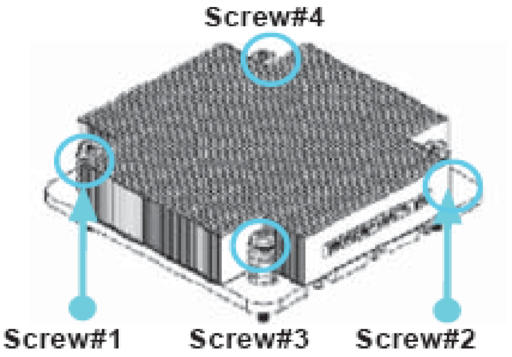


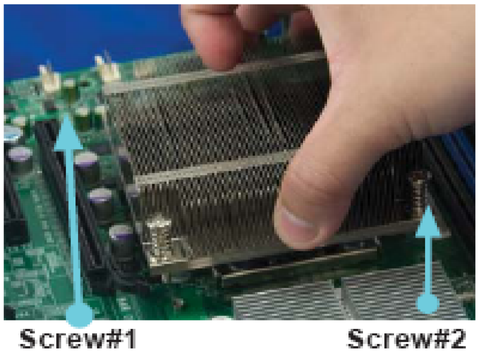
Installing a Passive CPU Heatsink

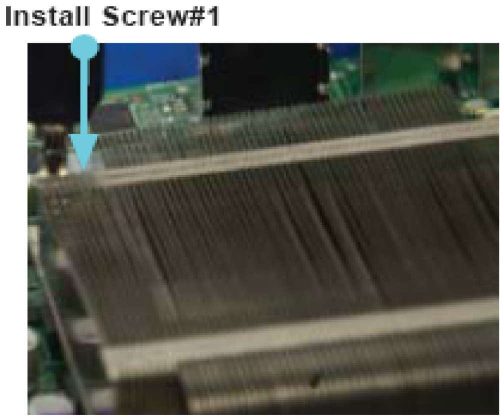
1. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the retention mechanism.

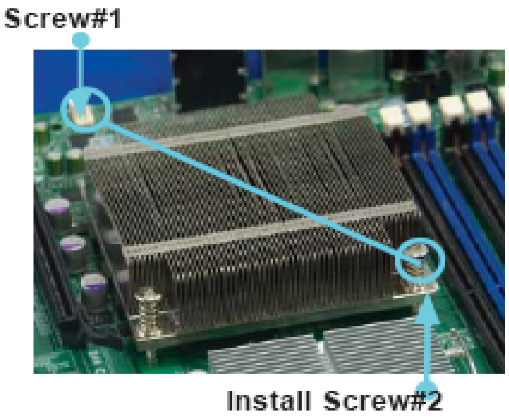
2. Install two diagonal screw and tighten them until just snug.

3. Repeat steps 2 with the #3 and #4 screws. Make sure all screws are snug.


Screw#4
Screw#1
Screw#3
Screw#2


Screw#1
Screw#2


Install Screw#1


Screw#1
Install Screw#2

Removing the Heatsink

1. Power down the system and unplug the power cord from the power supply.

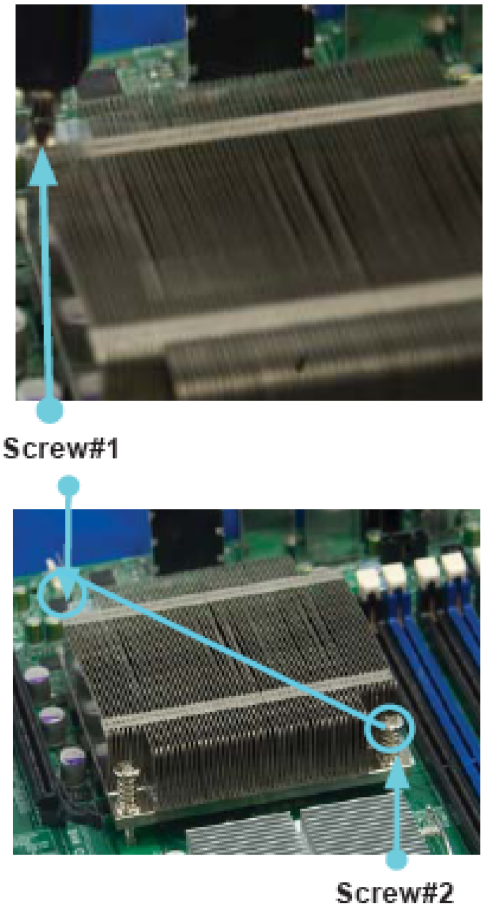
2. Disconnect the heatsink fan’s wires from the fan header.

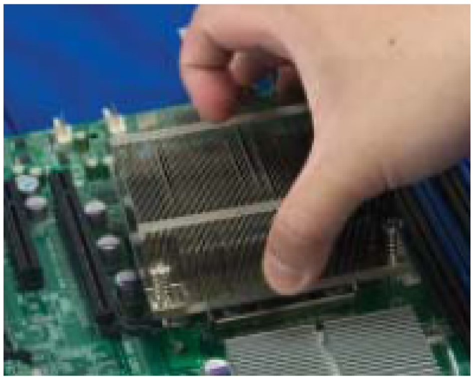
3. Using a screwdriver, loosen and remove the heatsink screws from the serverboard in the sequence as shows in the previous section (#1 and #2 followed by #3 and #4.

4. Hold the heatsink as showin in the picture on the right and gently wiggle it to loosen it from the CPU.

5. Once the heatsink is loose, remove it from the CPU socket.

6. To reinstall the heatsink, clean the surface of the CPU and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease to the surface of the CPU then reinstall the heatsink.





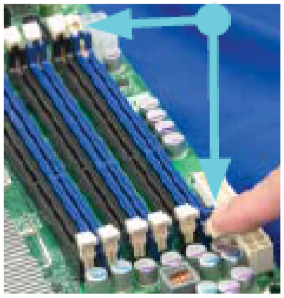
5.6 Installing Memory Modules

1. Insert the desired number of DIMMs into the memory slots, starting with DIMM #1A. For best performance, please use the memory modules of the same type and same speed in the same bank. See the DIMM Installation Chart on the following page.

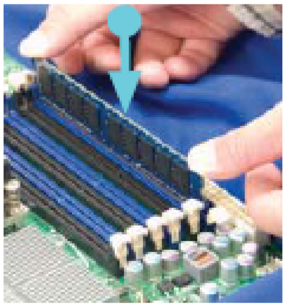
2. Press down the release tabs on the ends of a memory slot. Insert each DIMM module vertically into its slot. Pay attention to the notch along the bottom of the module to prevent inserting the DIMM module incorrectly.

3. Gently press down on the DIMM module until it snaps into place in the slot. Repeat for all of the modules.

4. Reverse the steps above to remove the DIMM modules from the serverboard.

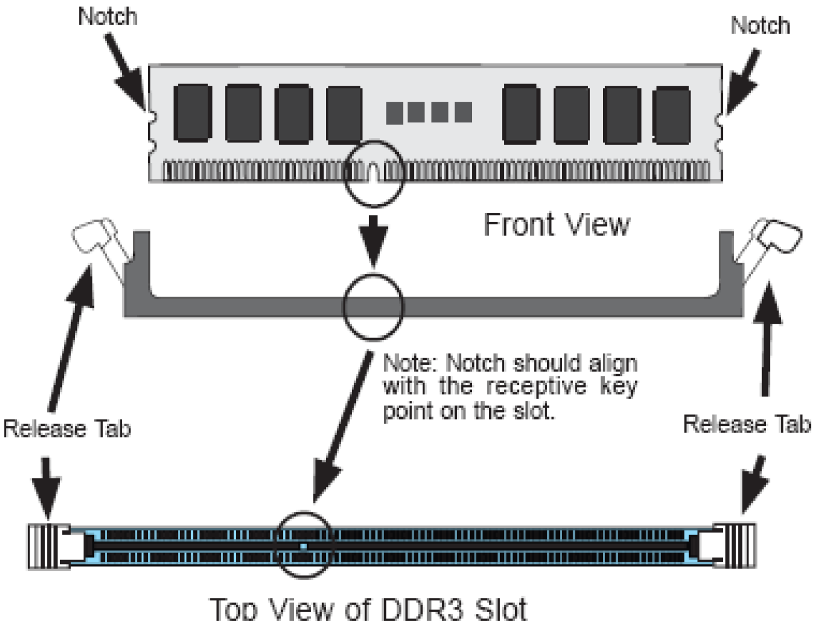


Press the release tabs



Insert & press a DIMM into the slot

Figure 5-3. DIMM Installation



Note: Notch should align with the receptive key point on the slot.

To Install: Insert module vertically and press down until it snaps into place. Pay attention to the alignment notch at the bottom.

To Remove:
Use your thumbs to gently push the release tabs near both ends of the module. This should release it from the slot.

Memory Support

It supports up to 24 GB Registered ECC DDR3-1333/1066/800 MHz registered ECC SDRAM in 6 DIMM slots. DIMM sizes of 4GB, 2GB, and 1GB are supported.

Populating DIMMs

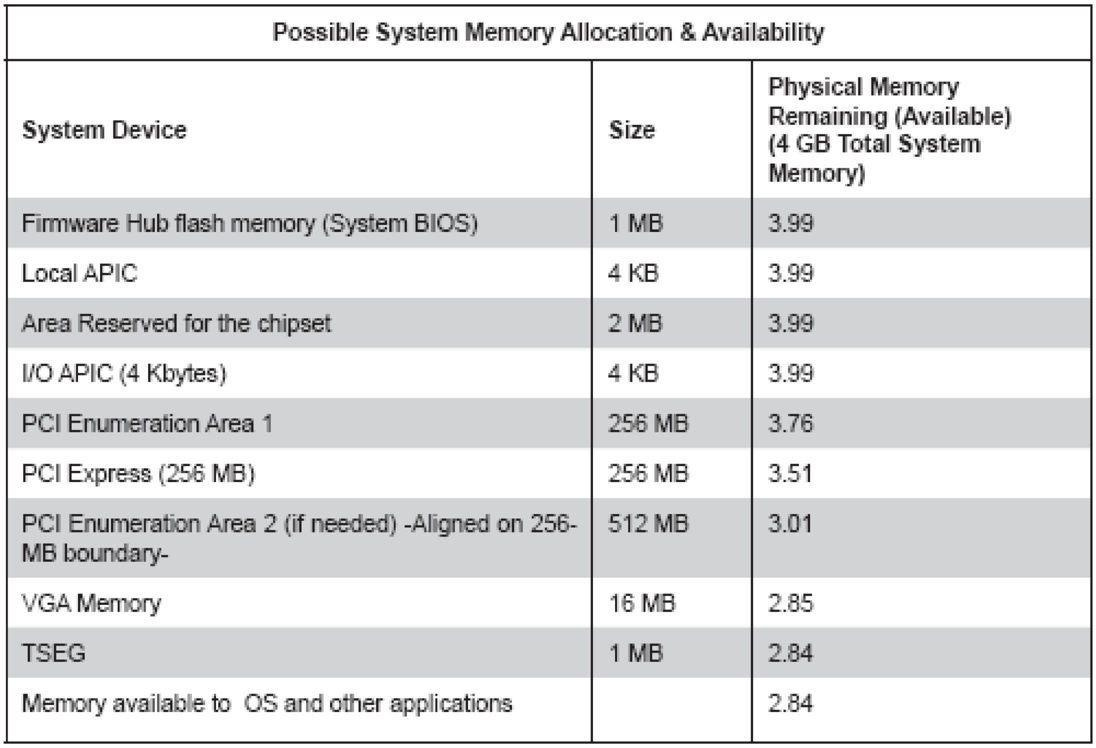
Follow the tables below when installing memory.

Populating DIMMs for Optimal Performance For One CPU (CPU1) Installed (Populate the CPU1 DIMM slots)			
	Branch 0	Branch 1	Branch 2
3 DIMMs	P1-1A	P1-2A	P1-3A

Populating DIMMs for Optimal Performance For One CPU (CPU2) Installed (Populate the CPU2 DIMM slots)			
	Branch 0	Branch 1	Branch 2
3 DIMMs	P2-1A	P2-2A	P2-3A

Populating DIMMs for Optimal Performance For Two CPUs Installed						
	CPU1 DIMMs			CPU2 DIMMs		
	Branch 0	Branch 1	Branch 2	Branch 0	Branch 1	Branch 2
6 DIMMs	P1-1A	P1-2A	P1-3A	P2-1A	P2-2A	P2-3A

Memory Population Table				
DIMM Slots per Channel	DIMMs Populated per Channel	DIMM Type (Reg.= Registered)	Speeds (in MHz)	Ranks per DIMM (any combination; SR=Single Rank, DR=Dual Rank, QR=Quad Rank)
1	1	Reg. DDR3 ECC	800,1066,1333	SR, DR
1	1	Reg. DDR3 ECC	800,1066,	QR



Possible System Memory Allocation & Availability		
System Device	**Size**	**Physical Memory Remaining (Available) (4 GB Total System Memory)**
Firmware Hub flash memory (System BIOS)	1 MB	3.99
Local APIC	4 KB	3.99
Area Reserved for the chipset	2 MB	3.99
I/O APIC (4 Kbytes)	4 KB	3.99
PCI Enumeration Area 1	256 MB	3.76
PCI Express (256 MB)	256 MB	3.51
PCI Enumeration Area 2 (if needed) -Aligned on 256-MB boundary-	512 MB	3.01
VGA Memory	16 MB	2.85
TSEG	1 MB	2.84
Memory available to OS and other applications		2.84

5.7 Adding PCI Cards

It includes a riser card. This riser fits into a PCI slot to support a full-height, half-length PCI Express expansion card. (THe riser card provides a PCI-E x 8 signal.)

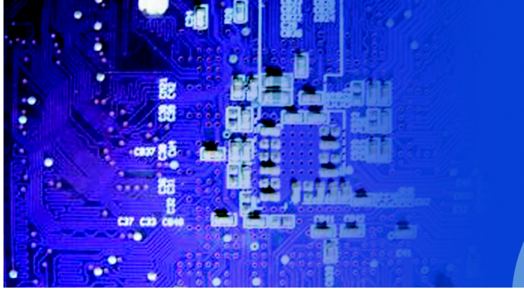
PCI Card Installation

When installing a PCI add-on card, make sure you install it into a slot that supports the speed of the card.

1. Swing the release tab on the PCI slot shield.
2. Insert the PCI card into the riser card, pushing down with your thumbs evenly on both sides of the card.
3. Finish by pushing the release tab back to its original (locked) position.

5.8 Serverboard Details

Serverboard Layout



5.9 Connector Definitions

ATX Power Connector

The primary power supply connector meets the SSI EPS 12V specification. Refer to the table on the right for the pin definitions of the ATX 14-pin power connector. You must also connect the 8-pin processor power connectors to your power supply.

ATX Power 24-pin Connector Pin Definitions

Pin#	Definition	Pin #	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

Processor Power Connector
In addition to JPW1, the 12V 8-pin processor power connectors at JPW2 and JPW3 must be connected to your serverboard. Failure in doing so will void the manufacturer warranty on your power supply and serverboard.

Processor Power Connector Pin Definitions

Pins	Definition
1 through 4	Ground
5 through 8	+12V

Required Connection

PW_ON Connector

The PW_ON connector is on pins 1 and 2 of JF1. This header should be connected to the chassis power button. See the table on the right for pin definitions.

Power Button Pin Definitions

Pin#	Definition
1	PW_ON
2	Ground

Reset Connector

The reset connector is located on pins 3 and 4 of JF1 and attatches to the reset switch on the computer chassis.

Reset Button Pin Definitions

Pin#	Definition
3	Reset
4	Ground

Power Fail LED

The Power Fail LED Connection is located on pins 5 and 6. Refer to the table on the right for pin definitions.

PWR Fail LED Pin Definitions	
Pin#	Definition
5	Vcc
6	Ground

Overheat LED (OH)

Conneect an LED to the OH connection on pins 7 and 8 of JF1 to provide advanced warning of chassis overheating. Refer to the table on the right for pin definitions.

OH/Fan Fail LED Pin Definitions	
Pin#	Definition
7	Vcc
8	Ground

NIC2 (LAN2) LED

The LED Connections for LAN2 are on pins 9 and 10 of JF1. Attatch LAN LED cables to display network activity. See the table on the right for pin definitions.

NIC2 LED Pin Definitions	
Pin#	Definition
9	Vcc
10	Ground

NIC1 (LAN1) LED

The LED connections for LAN1 are on pins 11 and 12 of JF1. Attatch LAN LED cables to display network activity. See the table on the right for pin definitions.

NIC1 LED Pin Definitions	
Pin#	Definition
11	Vcc
12	Ground

HDD LED

The HDD LED connection is located on pins 13 and 14 of JF1. Attatch the hard drive LED cable here to display disk activity (for any hard drives on the system. Including the Serial ATA and IDE). See the table on the right for pin definitions.

HDD LED Pin Definitions	
Pin#	Definition
13	Vcc
14	HD Active

Power on LED

The Power On LED connector is located on pins 15 and 16 of JF1. This connection is used to provide LED indication of power being supplied to the system. See the table on the right for pin definitions.

Power LED Pin Definitions

Pin#	Definition
15	5V Stby
16	Control

NMI Button

The non-maskable interrupt button header is located on pins 19 and 20 of JF1. Refer to the table on the right for pin definitons.

NMI Button Pin Definitions

Pin#	Definition
19	Control
20	Ground

Fan Headers

There are six fan headers. All are 4-pin fans but are backward compatible with traditional 3-pin fans. FAN1 is for the CPU1 heatsink and FAN2 is for the CPU2 heatsink. See the table on the right for pin definitions.

Fan Header Pin Definitions

Pin#	Definition
1	Ground (Black)
2	+12V (Red)
3	Tachometer
4	PWM Control

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keybaord and the PS/2 mouse are located on the rear IO panel. The mouse port is above the keyboard port. See the table on the right for pin definitions.

PS/2 Keyboard and Mouse Port Pin Definitions

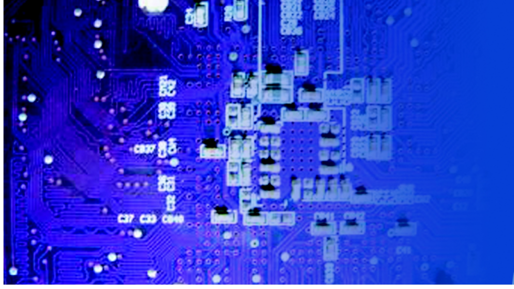
Pin#	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

Chassis Intrusion

The Chassis Intrustion is designated JL1. See the board layout for the location of JL1 and the table on the right for pin definitions.

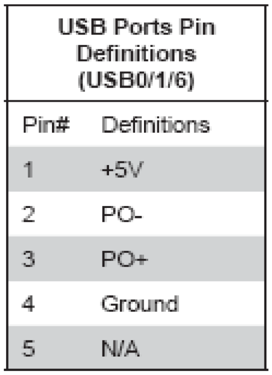
Chassis Intrusion Pin Definitions

Pin#	Definition
1	Intrusion Input
2	Ground

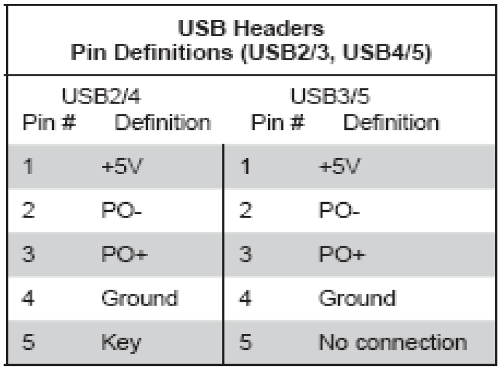


Universal Serial Bus (USB)

There are two Universal Serial Bus ports located on the I/O panel and five additional USB headers located on the serverboard. The headers labeled USB 2/3 and USB 4/5 can be used to provide front side USB acc ess (cables not included). USB 6 is an A type. See the tables on the right for pin definitions.



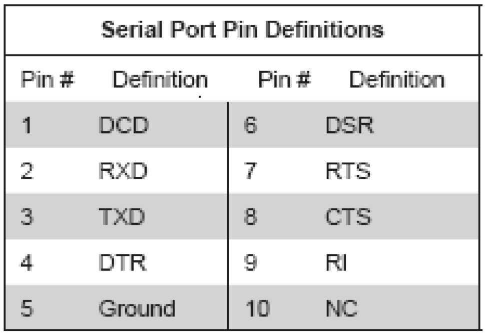
USB Ports Pin Definitions (USB0/1/6)	
Pin#	Definitions
1	+5V
2	PO-
3	PO+
4	Ground
5	N/A



USB Headers Pin Definitions (USB2/3, USB4/5)			
USB2/4		USB3/5	
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	Key	5	No connection

Serial Ports

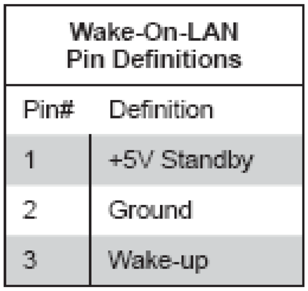
Two serial ports are included on the serverboard: COM1 is a port located beside the USB ports and COM2 is a header located on the corener of the board near the SIMLC. See the table on the right for pin definitions.



Serial Port Pin Definitions			
Pin #	Definition	Pin #	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	NC

Wake-On-LAN

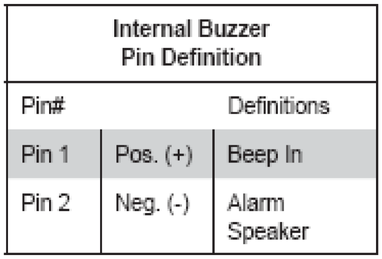
The Wake-On-LAN header is designated JWOL on the serverboard. See the table on the right for pin definitons. You must enable the LAN Wak-Up setting in BIOS to use the function. (You must also have LAN card with a Wake-On-LAN connector and cable to use this feature.)



Wake-On-LAN Pin Definitions	
Pin#	Definition
1	+5V Standby
2	Ground
3	Wake-up

Onboard Speaker (SP1)

The onboard speaker provides audible indications for carious beep codes. See the table on the right for pin definitions.

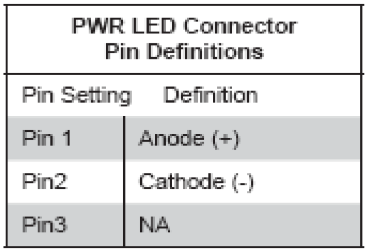


Internal Buzzer Pin Definition

Pin#		Definitions
Pin 1	Pos. (+)	Beep In
Pin 2	Neg. (-)	Alarm Speaker

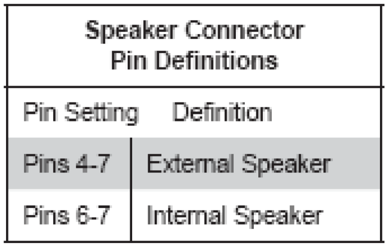
Power LED/Speaker

On the JD1 header, pins 1-3 are for a power LED and pins 4-7 are for the speaker. See the table on the right for speaker pin definitions.
Note: The speaker connector pins are for use with an external speaker. If you wish to use the onboard speaker, you should close pins 6-7 with a jumper.



PWR LED Connector Pin Definitions

Pin Setting	Definition
Pin 1	Anode (+)
Pin2	Cathode (-)
Pin3	NA

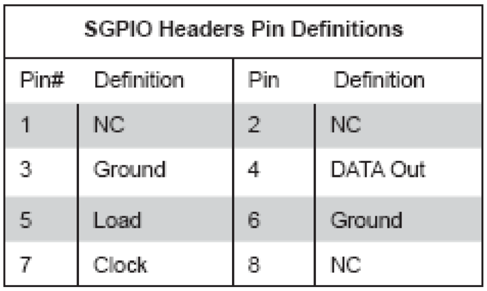


Speaker Connector Pin Definitions

Pin Setting	Definition
Pins 4-7	External Speaker
Pins 6-7	Internal Speaker

SGPIO Headers

Two SGPIO (Serial General Purpose Input/Output) headers are included on the serverboard. These headers are used to communicate with the System Monitoring chip on the backplane and provide a serial interface to the SATA ports. See the table on the right for pin definitions.

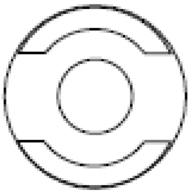


SGPIO Headers Pin Definitions

Pin#	Definition	Pin	Definition
1	NC	2	NC
3	Ground	4	DATA Out
5	Load	6	Ground
7	Clock	8	NC

I-Button

An onboard I-Button, located next to USB ports 2~3, is a 1-wire computer chip enclosed in a durable stainless steel can. The I-Button stores instructions and allows the HostRAID to operate with Mega-RAID firmware.



Lan 1/2 (Ethernet Ports)

Two gigabit Ethernet ports (deisnated LAN1 and LAN2) are located beside the VGA port on the I/O backplane. These ports accept RJ45 type cables.

Power SMB (PC) Header

The power system management bus header monitors power supply, fan and system temperatures. See the table on the right for pin definitions.

PWR SMB Pin Definitions

Pin#	Definition
1	Clock
2	Data
3	PWR Fail
4	Ground
5	+3.3V

IPMB

IPMB is a System Management Bus header for IPMP 2.0. Connect the appropriate cables here to use the IPMB connection on your system.

SMB Header Pin Definitions

Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

Overheat LED/Fan Fall (JOH1)

The JOH1 header connects to an LED indicator to provide warnings of chassis overheating or fan failure. This LED will blink when a fan failure occurs. Refer to the table on right for pin definitions.

Overheat LED Pin Definitions

Pin#	Definition
1	5vDC
2	OH Active

OH/Fan Fail LED Pin Definitions

State	Message
Solid	Overheat
Blinking	Fan Fail

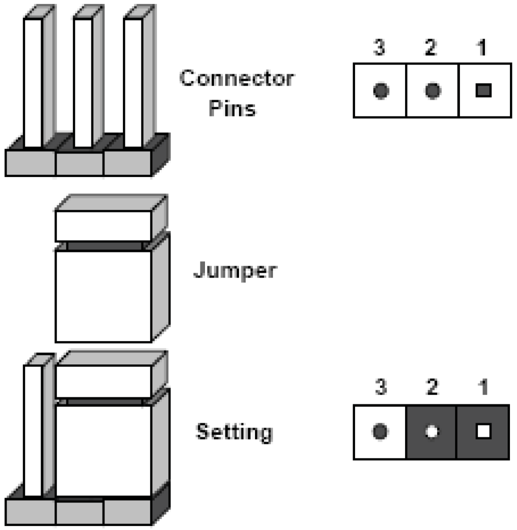
Unit Identifier Button

A Unit Identifier (UID) button is located next to the Fan 6 Header. When you push the UID button, both Rear UID and Front Panel UID Indicators will illuminate. Push it again to turn off both indicators. These UID Indicators provide easy identification of a system unit that may be in need of service.

5.10 Jumper Settings

Explain of Jumpers

To modify the operation of the serverboard, jumpers can be used to chose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 identified with a square solder pad on the printed circuit board. See the serverboard layout pages for jumper locations.



CMOS Clear

JBT1 is used to clear CMDS (which will also clear any passowrds.) Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS. To clear CMOS,

1. First power down the system and unplug the power cord(s).

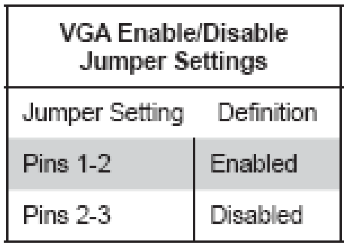
2. With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver.

3. Remove the screwdriver (or shorting device).

4. Reconnect the power cord(s) and power on the system.

VGA Enable/Disable

JPG1 allows you to enable or disable the VGA port. The default position is on pins 1 and 2 to enable VGA. See the table

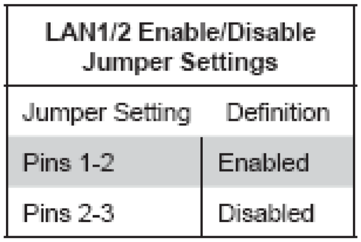


VGA Enable/Disable Jumper Settings

Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

LAN1/LAN2 Enable/Disable

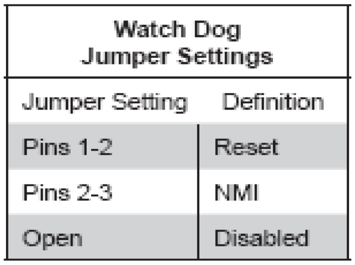
Change the setting or jumper JPL1 to enable or disable the LAN1 port and JPL2 to enable or disable the LAN2 port on the serverboard. See the table on the right for jumper settings. The default setting is enabled.



LAN1/2 Enable/Disable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

Watch Dog

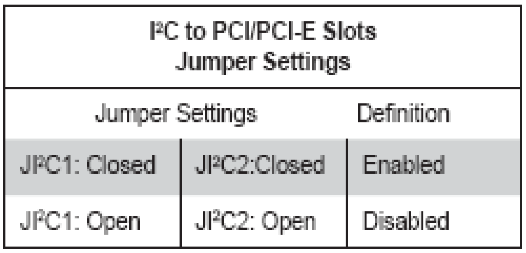
JWD enables the Watch Dog Function, a system monitor that takes action when a software applications freezes the system. Jumping pins 1-2 will have WD reboot the system if a program frerezes. Jumping pins 2-3 will generate a non-maskable interrupy for the program that has frozen. See the table on the right for jumper settings.



Watch Dog Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Reset
Pins 2-3	NMI
Open	Disabled

I2C Bus to PCI/PCI-Exp. Slots

Jumpers JIC2 allow you to connect the system management bus to the PCI and PCI-E slots. The defauly setting is open (Disabled). Both jumpers must be set to the same setting. See the table on the right for jumper settings.



I^{2}C to PCI/PCI-E Slots Jumper Settings		
Jumper Settings		Definition
JI^{2}C1: Closed	JI^{2}C2:Closed	Enabled
JI^{2}C1: Open	JI^{2}C2: Open	Disabled

5.11 Onboard Indicators

LAN1/LAN2 Indicators

The Ethernet ports have two LEDs. On each GB LAN port, one LED indicates activity when blinking while the other LED may be green, amber or off to indicate the speed of the connection. See the table on the right for the functions associated with the connection speed LED.

LAN LED (Connection Speed Indicator)	
LED Color	Definition
Off	10 Mb/s
Green	100 Mb/s
Amber	1 Gb/s

OnBoard Power LED

An OnBoard Power LED is located at LE1. When this LED is lit, the system is on. Be sure to turn off the system and unplug the power cord before removing or installing components. See the table at right for more information.

Onboard PWR LED	
LED Color	Definition
Off	System Off (PWR cable not connected)
Green	System Power On

Rear UID LED

The rear UID LED is located at LE2 on the backplane. This LED is used in conjuntion with the front UID LED on the Front Control Panel and the rear UID switch to provide easy identification of a system in need of service.

SATA Port Pin Definitions	
Pin #	Definition
1	Ground
2	TXP
3	TXN
4	Ground
5	RXN
6	RXP
7	Ground

5.12 SATA Port Connections

SATA Ports

There are no jumper to enable the SATA ports, which are designated I-SATA0 ~ I-SATA5 See the table on the right for pin definitions.

SATA Port Pin Definitions	
Pin #	Definition
1	Ground
2	TXP
3	TXN
4	Ground
5	RXN
6	RXP
7	Ground

5.13 Installing SoftwarePreface

After the hardware has been installed, you should first install the operating system and then the drivers. The necessary drivers are all included on the Supermicro CDs that came packaged with your serverboard.

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC512F-520B chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows.

Tools Required: The only tool you will need to install components and perform maintainance is a Philips screwdriver.

6-1 Static-Sensitive Devices

Electrostatic discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully.

The following measures are generally sufficient to protect your equipment from

ESD damage.

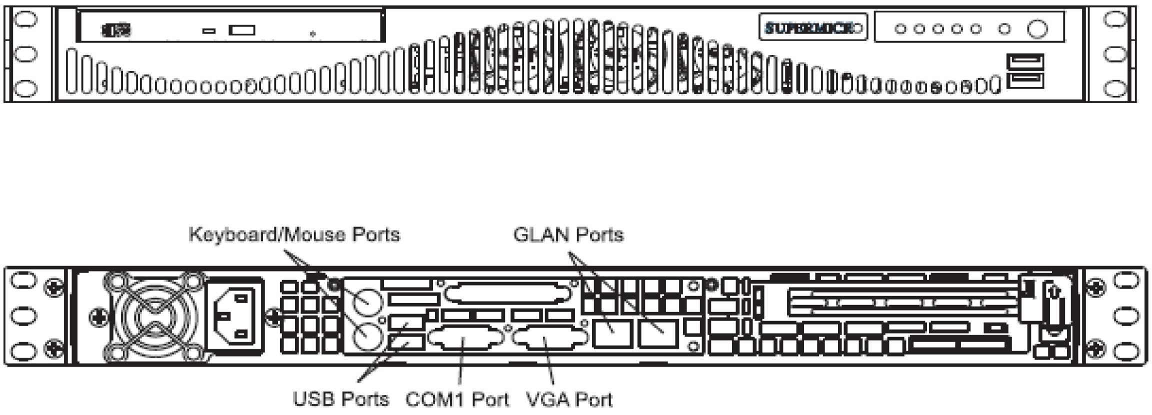
Precautions

o Use a grounded wrist strap designed to prevent static discharge.
o Touch a grounded metal object before removing any board from its antistatic bag.
o Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
o When handling chips or modules, avoid touching their pins.
o Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.
o For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Unpacking

The serverboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

Figure 6-1. Chassis Views



6-2 Control Panel

The control panel (located on the front of the chassis) must be connected to the JF1 connector on the serverboard to provide you with system control buttons and status indicators. These wires have been bundled together in a ribbon cable to simplify the connection.

Connect the cable from JF1 on the serverboard to the Control Panel PCB (printed circuit board). Make sure the red wire plugs into pin 1 on both connectors. Pull all excess cabling out of the airflow path.

The LEDs inform you of system status. See Chapter 3 for details on the LEDs and the control panel buttons. Details on JF1 can be found in Chapter 5.

6-3 System Fans

It employs three sets of 4-cm counter-rotating fans to provide cooling. Each fan unit is made up of two fans joined back-to-back, which rotate in opposite directions. This counter-rotating action generates exceptional airflow and works to dampen vibration levels. The fans can adjust their speed according to the heat level sensed in the system, which results in more efficient and quieter fan operation. Fan speed is controlled by a setting in BIOS (see Chapter 7). Each fan in a set has its own separate tachometer.

Note: It is very important that the chassis top cover is properly installed for the airflow to circulate properly through the chassis and cool the components.

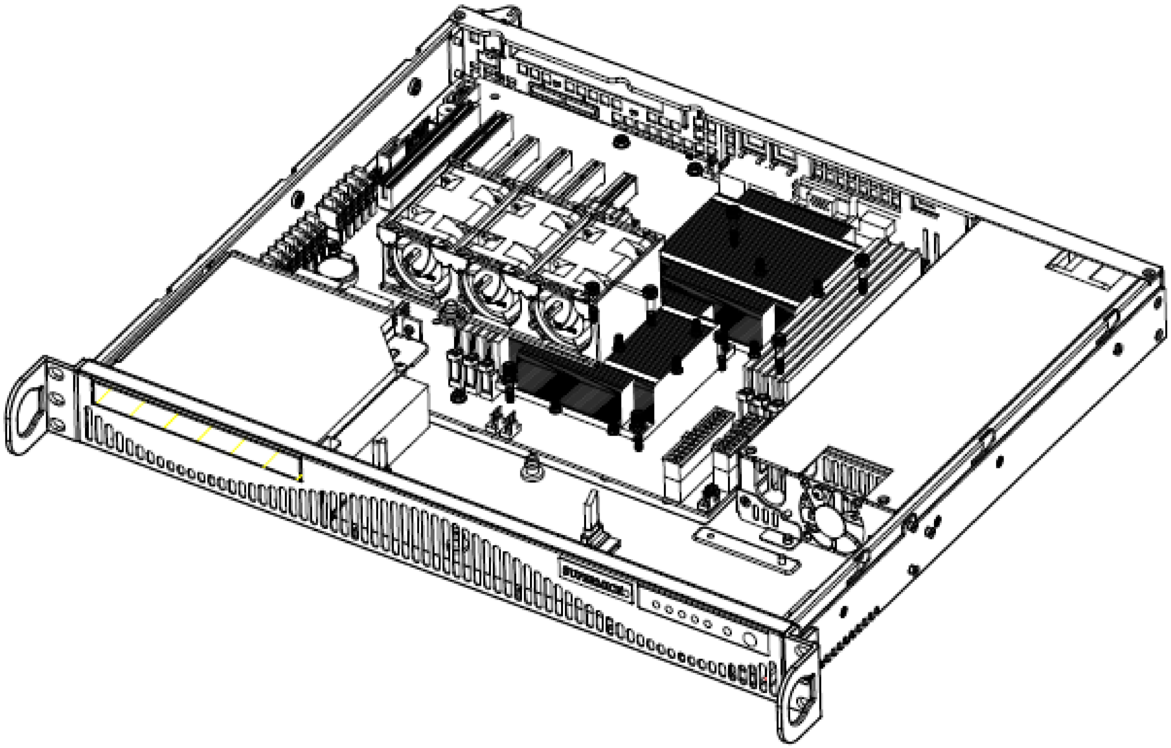
System Fan Failure

If a fan fails, the remaining fans will ramp up to full speed and the overheat/fan fail LED on the control panel will blink on and off. Replace any failed fan at your earliest convenience with the same type and model (the system can continue to run with a failed fan).

Replacing System Fans (Figure 6-2)

1. Remove the chassis cover to see which fan has failed.
2. Power down the server and remove the AC power cord.
3. Detach the fan wiring then grasp the failed fan unit and lift it out of the chas- sis.
4. Replace the failed fan with an identical 4-cm, 12 volt fan (see Appendix C).
5. Push the new fan into the vacant space in the housing making sure the ar- rows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans.
6. Reposition the fan housing back over the two mounting posts in the chassis, then reconnect the fan wires to the same chassis fan headers you removed them from.
7. Power up the system and check that the fan is working properly and that the LED on the control panel has turned off. Finish by replacing the chassis cover.

Figure 6-2. System Cooling Fans



6-4 Drive Bay Installation/Removal

Accessing the Drive Bays

DVD-ROM/Serial ATA Drives: For installing or removing the DVD-ROM or SATA drive, you will need to gain access to the inside of the server by removing the top cover of the chassis. Note: Only a "slim" DVD-ROM will fit in the 6016T-MR.

Serial ATA Drive Installation

The SATA drive is not hot-swappable, meaning system power must be turned off before installing or removing.

1. First power down the system and then remove the top cover of the chassis as described on page 6-7.
2. Unscrew the retention screw at the top center of the drive, then push the drive tray out from the back until you can grasp and pull it out through the front of the chassis.
3. Remove the drive from the drive tray.
4. To add a new SATA drive, install a drive into the tray with the printed circuit board side facing down and so that the mounting holes align with those in the tray.
5. Secure the drive to the tray with the four screws.
6. Replace the top cover when finished. See Figure 6-3.

Note: it can accommodate two internal SATA hard drives, one on each side of the fans.

DVD-ROM Drive Installation

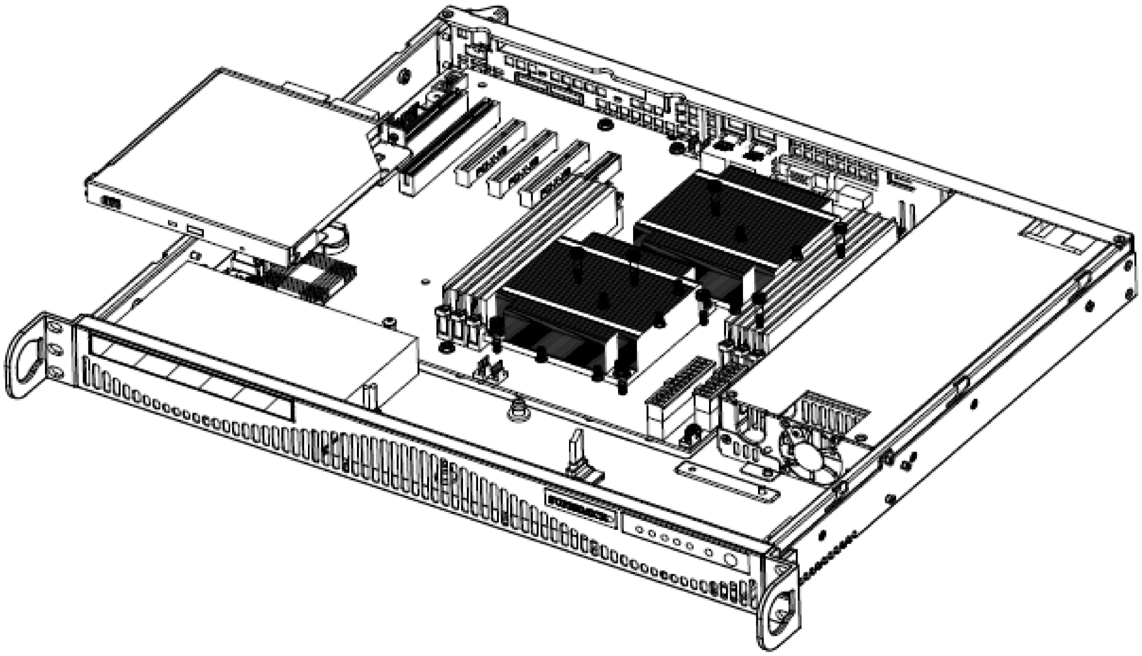
The top cover of the chassis must be opened to gain full access to the DVD-ROM drive bay. The DVD-ROM must have a "slim" profile to fit into it. If you cannot remove the top cover with the system remaining in the rack, follow the procedure below.

DVD-ROM Drive Installation

1. First shutdown the system and disconnect the AC power cable.
2. Make sure the system is supported from underneath then remove the front bracket screws that secure the unit to the rack.
3. Carefully lift the server out of the rack.
4. Open the cover by following the procedure described on page 6-7.
5. Remove the screws that secure the DVD-ROM drive to the chassis and then lift the drive out of the chassis. See Figure 6-3.

Note: A red mark on a ribbon cable typically designates the location of pin 1.

Figure 6-3. Removing the DVD-ROM Drive



6-5 Power Supply

The RMC7150 has a single 520 watt power supply. This power supply has the capability of operating at a 100 or 240 input voltage. You must power down the system and then unplug the AC power cord to completely remove power from the system before removing the power supply.

Power Supply Failure

If the power supply unit fails, the system will shut down and you will need to replace the power supply unit. Replacement units can be ordered directly from Supermicro (see part numbers in Appendix C and contact infomation in Chapter 1).

Accessing the Inside of the System

1. Power down the system and remove the AC power cord.
2. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click").
3. Next, remove the screws from the lips on either side of the cover then de- press the two buttons on the cover to release it.
4. Push the cover away from you then lift it from the chassis to gain full access to the inside of the server.

Replacing the Power Supply

1. To remove the failed power unit, remove the two screws on the back of the power supply and a third from the front of the power supply, which secures it to the bottom of the chassis.
2. Lift the unit straight out of the chassis. (The power cord should have already been removed.)
3. Replace the failed unit with another unit of the same wattage. You must replace it with the exact same power supply.
4. Carefully insert the new unit into position in the chassis and secure it with the two screws at the rear of the unit and the third at the front.
5. Reconnect the power cord, replace the chassis top cover and push the unit back into the rack.
6. Finish by turning on the power switch on the power supply, then depress the power button on the front of the system.

Chapter 7 BIOS

7-1 Introduction

This chapter describes the AMI BIOS Setup Utility. The AMI ROM BIOS is stored in a Flash EEPROM and can be easily updated. This chapter de- scribes the basic navigation of the AMI BIOS Setup Utility setup screens.

Starting BIOS Setup Utility

How To Change the Configuration Data

To enter the AMI BIOS Setup Utility screens, press the <Delete> key while the system is booting up.

Note: In most cases, the <Delete> key is used to invoke the AMI BIOS setup screen. There are a few cases when other keys are used, such as <F1>, <F2>, etc.

Each main BIOS menu option is described in this manual. The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured. Options in blue can be configured by the user. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it. (Note: the AMI BIOS has default text messages built in. Supermicro retains the option to include, omit, or change any of these text messages.)

The AMI BIOS Setup Utility uses a key-based navigation system called "hot keys". Most of the AMI BIOS setup utility "hot keys" can be used at any time during the setup navigation process. These keys include <F1>, <F10>, <Enter>, <ESC>, arrow keys, etc.

Note: Options printed in Bold are default settings.

The configuration data that determines the system parameters may be changed by entering the AMI BIOS Setup utility. This Setup utility can be accessed by pressing

<Del> at the appropriate time during system boot.

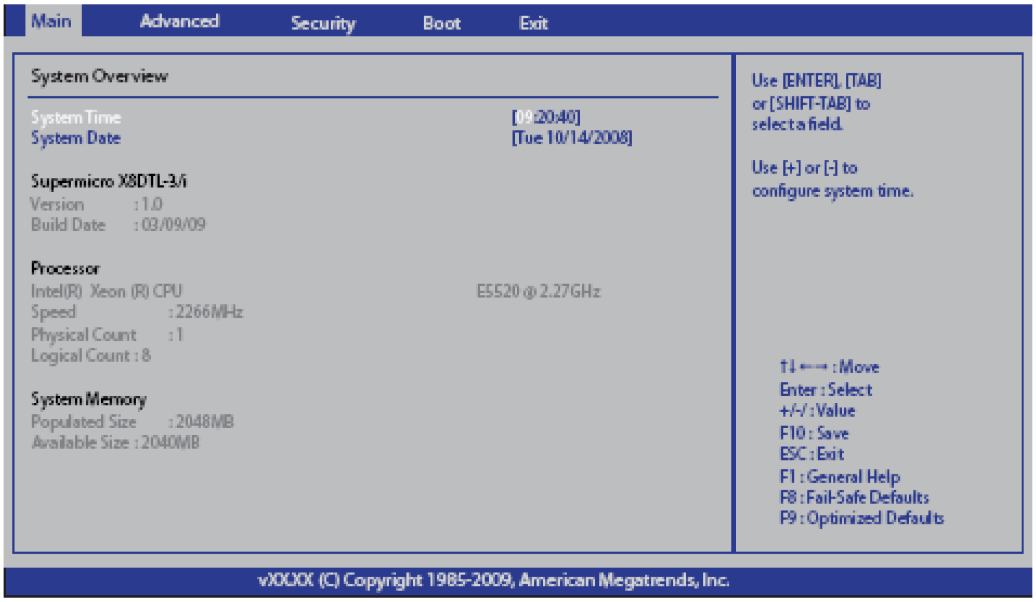
Starting the Setup Utility

Normally, the only visible Power-On Self-Test (POST) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the AMI BIOS Setup Utility. From the main menu, you can access the other setup screens. An AMI BIOS identification string is displayed at the left bottom corner of the screen below the copyright message.

Warning! Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall Supermicro be liable for direct, indirect, special, incidental, or consequential damages arising from a BIOS update. If you have to update the BIOS, do not shut down or reset the system while the BIOS is updating. This is to avoid possible boot failure.

7-2 Main Setup

When you first enter the AMI BIOS Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab on the top of the screen. The Main BIOS Setup screen is shown below.



System Overview

System Time [09:20:40]
System Date [Tue 10/14/2008]

Supermicro X8DTL-3/i
Version : 1.0
Build Date : 03/09/09

Processor
Intel(R) Xeon (R) CPU E5520 @ 2.27GHz
Speed : 2266MHz
Physical Count : 1
Logical Count : 8

System Memory
Populated Size : 2048MB
Available Size : 2040MB

Use [ENTER], [TAB] or [SHIFT-TAB] to select a field.

Use [+] or [-] to configure system time.

↑↓ ←→ : Move
Enter : Select
+/-/ : Value
F10 : Save
ESC : Exit
F1 : General Help
F8 : Fail-Safe Defaults
F9 : Optimized Defaults

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System Overview: The following BIOS information will be displayed

System Time/System Date

Use this option to change the system time and date. Highlight System Time or Sys- tem Date using the arrow keys. Key in new values through the keyboard and press

<Enter>. Press the <Tab> key to move between fields. The date must be entered in Day MM/DD/YY format. The time is entered in HH:MM:SS format. (Note: The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00.)

Acnodes

o Version: This item displays the BIOS revision used in your system.
o Build Date: This item displays the date when this BIOS was completed.

Processor

The AMI BIOS will automatically display the status of the processor used in your system:

o CPU Type: This item displays the type of CPU used in the motherboard.
o Speed: This item displays the speed of the CPU detected by the BIOS.
o Physical Count: This item displays the number of processors installed in your system as detected by the BIOS.
o Logical Count: This item displays the number of CPU Cores installed in your system as detected by the BIOS.

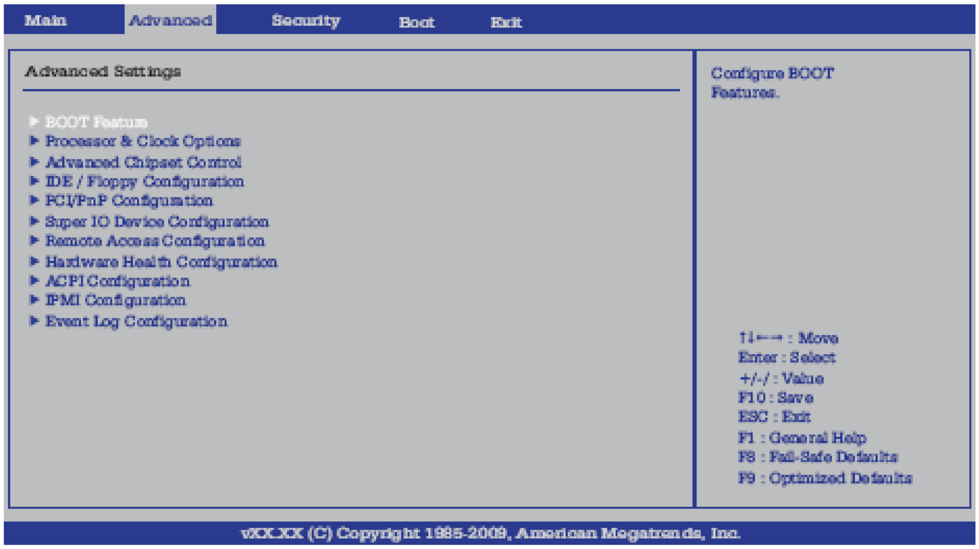
System Memory

This displays the size of memory available in the system:

o Populated Size: This item displays the installed memory size detected by the BIOS.
o Available Size: This item displays the available memory detected by the BIOS.

7-3 Advanced Setup Configurations

Use the arrow keys to select Boot Setup and hit <Enter> to access the submenu items:


Main
Advanced
Security
Boot
Exit
Advanced Settings
▶ BOOT Feature
▶ Processor & Clock Options
▶ Advanced Chipset Control
▶ IDE / Floppy Configuration
▶ PCI/PnP Configuration
▶ Super IO Device Configuration
▶ Remote Access Configuration
▶ Hardware Health Configuration
▶ ACPI Configuration
▶ IPMI Configuration
▶ Event Log Configuration
↑↓←→ : Move
Enter : Select
+/-/ : Value
F10 : Save
ESC : Exit
F1 : General Help
F8 : Fail-Safe Defaults
F9 : Optimized Defaults

Configure BOOT Features.

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XBOOT Features

Quick Boot
If Enabled, this option will skip certain tests during POST to reduce the time needed for system boot. The options are Enabled and Disabled.

Quiet Boot
This option allows the bootup screen options to be modified between POST mes- sages or the OEM logo. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The op- tions are Enabled and Disabled.

AddOn ROM Display Mode
This sets the display mode for Option ROM. The options are Force BIOS and Keep Current.

Bootup Num-Lock
This feature selects the Power-on state for Numlock key. The options are Off and On.

PS/2 Mouse Support
This feature enables support for the PS/2 mouse. The options are Disabled, Enabled and Auto.

Wait For 'F1' If Error
This forces the system to wait until the 'F1' key is pressed if an error occurs. The options are Disabled and Enabled.

Hit 'Del' Message Display
This feature displays "Press DEL to run Setup" during POST. The options are

Enabled and Disabled.

Watch Dog Function
If enabled, the Watch Dog Timer will allow the system to reboot when it is inactive for more than 5 minutes. The options are Enabled and Disabled.

Restore on AC Power Loss
Use this feature to set the power state after a power outage. Select Power-Off for the system power to remain off after a power loss. Select Power-On for the system power to be turned on after a power loss. Select Last State to allow the system to resume its last state before a power loss. The options are Power-On, Power-Off and Last State.

Interrupt 19 Capture
Interrupt 19 is the software interrupt that handles the boot disk function. When this item is set to Enabled, the ROM BIOS of the host adaptors will "capture" Interrupt

19 at boot and allow the drives that are attached to these host adaptors to function as bootable disks. If this item is set to Disabled, the ROM BIOS of the host adap- tors will not capture Interrupt 19, and the drives attached to these adaptors will not function as bootable devices. The options are Enabled and Disabled.

Resume On RTC Alarm
Use this feature to set an event using the Real Time Clock (RTC) to wake the system at specified times. The options are Enabled and Disabled.

RTC Alarm Date (Days)
This option appears if Resume On RTC Alarm is Enabled. The options are Every Day and 1 ~ 31 (corresponding to the days of the month.)

RTD Alarm Time
Set the time the system wakes up during the day specified under RTC Alarm Date above.

XProcessor and Clock Options
This submenu allows the user to configure the Processor and Clock settings.

CPU Ratio
If set to Manual, this option allows the user to set the ratio between the CPU Core Clock and the FSB Frequency. (Note: if an invalid ratio is entered, the AMI BIOS will restore the setting to the previous state.) The options are Auto and Manual.

Ratio CMOS Setting (Available when the item-CPU Ratio is set to Enabled)
Press "+" or "-" on your keyboard to set the ratio between the CPU Core clock and the FSB Frequency. The default setting for the CPU installed in your moth- erboard is [21].

Clock Spread Spectrum
Select Enable to use the feature of Clock Spectrum, which will allow the BIOS to monitor and attempt to reduce the level of Electromagnetic Interference caused by the components whenever needed. The options are Disabled and Enabled.

Hardware Prefetcher (Available when supported by the CPU)
If set to Enabled, the hardware prefetcher will prefetch streams of data and instruc- tions from the main memory to the L2 cache in the forward or backward manner to improve CPU performance. The options are Disabled and Enabled.

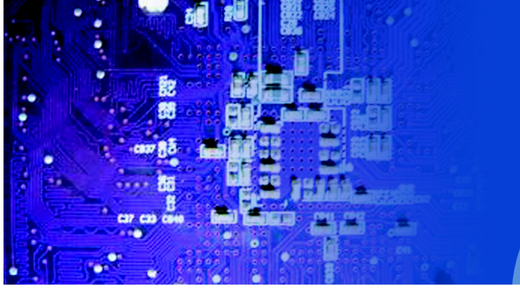
Adjacent Cache Line Prefetch (Available when supported by the CPU)
The CPU fetches the cache line for 64 bytes if this option is set to Disabled. The CPU fetches both cache lines for 128 bytes as comprised if Enabled.

Intel® Virtualization Technology (Available when supported by the CPU)
Select Enabled to use the feature of Virtualization Technology to allow one platform to run multiple operating systems and applications in independent partitions, creat- ing multiple "virtual" systems in one physical computer. The options are Enabled and Disabled. Note: If there is any change to this setting, you will need to power off and restart the system for the change to take effect. Please refer to Intel's web site for detailed information.
Execute-Disable Bit Capability (Available when supported by the OS and the CPU)
Set to Enabled to enable the Execute Disable Bit which will allow the processor to designate areas in the system memory where an application code can execute and where it cannot, thus preventing a worm or a virus from flooding illegal codes to overwhelm the processor or damage the system during an attack. The default is Enabled. (Refer to Intel and Microsoft Web Sites for more information.)

Simultaneous Multi-Threading (Available when supported by the CPU)
Set to Enabled to use the Simultaneous Multi-Threading Technology, which will result in increased CPU performance. The options are Disabled and Enabled.

Active Processor Cores
Set to Enabled to use a processor's Second Core and beyond. (Please refer to

Intel's web site for more information.) The options are All, 1 and 2.
Intel® EIST Technology
EIST (Enhanced Intel SpeedStep Technology) allows the system to automatically adjust processor voltage and core frequency in an effort to reduce power consump- tion and heat dissipation. Please refer to Intel's web site for detailed information. The options are Disabled and Enabled.



Intel® TurboMode Technology (Available when Intel® EIST Technology is enabled)

Select Enabled to use the Turbo Mode to boost system performance. The options are Enabled and Disabled.

C1E Support

Select Enabled to use the feature of Enhanced Halt State. C1E significantly reduces the CPU's power consumption by reducing the CPU's clock cycle and voltage during a "Halt State." The options are Disabled and Enabled.

Intel® C-STATE Tech

If enabled, C-State is set by the system automatically to either C2, C3 or C4 state. The options are Disabled and Enabled.

C-State package limit setting (Available when Intel® C-State Tech is enabled)

If set to Auto, the AMI BIOS will automatically set the limit on the C-State pack- age register. The options are Auto, C1, C3, C6 and C7.

C1 Auto Demotion

When enabled, the CPU will conditionally demote C3, C6 or C7 requests to C1 based on un-core auto-demote information. The options are Disabled and Enabled.

C3 Auto Demotion

When enabled, the CPU will conditionally demote C6 or C7 requests to C3 based on un-core auto-demote information. The options are Disabled and Enabled.

DCA Technology

This feature accelerates the performance of TOE devices. Note: A TOE device is a specialized, dedicated processor that is installed on an add-on card or a network card to handle some or all packet processing of this add-on card. For this motherboard, the TOE device is built inside the ESB 2 South Bridge chip. This feature is supported only by some types of processors (i.e., Intel Nehalem-WS 1S). The options are Enabled and Disabled.

DCA Prefetch Delay

A DCA Prefetch is used with TOE components to prefetch data in order to shorten execution cycles and maximize data processing efficiency. Prefetching too fre- quently can saturate the cache directory and delay necessary cache accesses. This feature reduces or increases the frequency the system prefetches data. The options are [8], [16], [32], [40], [48], [56], [64], [72], [80], [88], [96], [104], [112], [120]

XAdvanced Chipset Control

The items included in the Advanced Settings submenu are listed below:

XQPI & IMC Configuration

QPI Links Speed

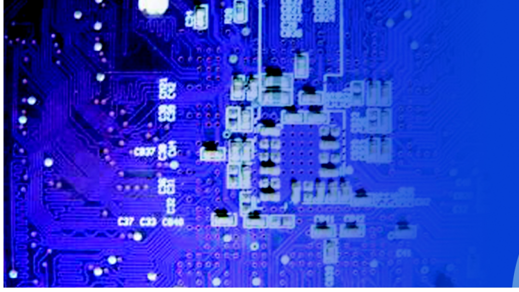
This feature selects QPI's data transfer speed. The options are Slow-mode, and Full Speed.

QPI Frequency

This selects the desired QPI frequency. The options are Auto, 4.800 GT, 5.866GT, 6.400 GT.

QPI L0s and L1

This enables the QPI power state to low power. L0s and L1 are automatically selected by the motherboard. The options are Disabled and Enabled.



Memory Frequency

This feature forces a DDR3 frequency slower than what the system has detected. The available options are Auto, Force DDR-800, Force DDR-1066, and Force DDR-1333.

Memory Mode

The options are Independent, Channel Mirror, Lockstep and Sparing. Independent - All DIMMs are available to the operating system.

Channel Mirror - The motherboard maintains two identical copies of all data in memory for redundancy.

Lockstep - The motherboard uses two areas of memory to run the same set of operations in parallel.

Sparing - A preset threshold of correctable errors is used to trigger fail-over. The spare memory is put online and used as active memory in place of the failed memory.

Demand Scrubbing

A memory error-correction scheme where the Processor writes corrected data back into the memory block from where it was read by the Processor. The op- tions are Enabled and Disabled.

Patrol Scrubbing

A memory error-correction scheme that works in the background looking for and correcting resident errors. The options are Enabled and Disabled.

Throttling - Closed Loop / Throttling - Open Loop

Throttling improves reliability and reduces power in the processor by automatic voltage control during processor idle states. Available options are Disabled and Enabled. If Enabled, the following items will appear:

Hysteresis Temperature (Closed Loop only)

Temperature Hysteresis is the temperature lag (in degrees Celsius) after the set DIMM temperature threshold is reached before Closed Loop Throttling begins. The options are Disabled, 1.5oC, 3.0oC, and 6.0oC.

Guardband Temperature (Closed Loop only)

This is the temperature which applies to the DIMM temperature threshold. Each step is in 0.5oC increment. The default is [006]. Press "+" or "-" on your keyboard to change this value.

Inlet Temperature

This is the temperature detected at the chassis inlet. Each step is in 0.5oC increment. The default is [070]. Press "+" or "-" on your keyboard to change this value.

Temperature Rise

This is the temperature rise to the DIMM thermal zone. Each step is in 0.5oC increment. The default is [020]. Press "+" or "-" on your keyboard to change this value.

Air Flow

This is the air flow speed to the DIMM modules. Each step is one mm/ sec. The default is [1500]. Press "+" or "-" on your keyboard to change this value.

Altitude

This feature defines how many meters above or below sea level the system is located. The options are Sea Level or Below, 1~300, 301~600, 601~900, 901~1200, 1201~1500, 1501~1800, 1801~2100, 2101~2400, 2401~2700, 2701~3000.

DIMM Pitch
This is the physical space between each DIMM module. Each step is in 1/1000 of an inch. The default is [400]. Press "+" or "-" on your keyboard to change this value.

Intel VT-d
Select Enabled to enable Intel's Virtualization Technology support for Direct I/O VT-d by reporting the I/O device assignments to VMM through the DMAR ACPI Tables. This feature offers fully-protected I/O resource-sharing across the Intel platforms, providing the user with greater reliability, security and availability in networking and data-sharing. The settings are Enabled and Disabled.

SR-IOV Support
Single Root I/O Virtualization is an industry-standard mechanism that allow devices to advertise their capability to be simultaneously shared among several virtual machines. SR-IOV is capable of partitioning a PCI function into several virtual interfaces for sharing the resources of a PCI Express (PCIe) device under a virtual environment. The options are Disabled and Enabled.

Intel I/OAT
The Intel I/OAT (I/O Acceleration Technology) significantly reduces CPU overhead by leveraging CPU architectural improvements, freeing resources for more other tasks. The options are Disabled and Enabled.

Max Payload Size
Some add-on cards perform faster with the coalesce feature, which limits the pay- load size to 128 MB; while others, with a payload size of 256 MB which inhibits the coalesce feature. Please refer to your add-on card user guide for the desired setting. The options are 256 MB and 128MB.

Active State Power Management
Select Enabled to start Active-State Power Management for signal transactions between L0 and L1 Links on the PCI Express Bus. This maximizes power-saving and transaction speed. The options are Enabled and Disabled.

USB Functions
This feature allows the user to decide the number of onboard USB ports to be en- abled. The Options are: Disabled, 2 USB ports, 4 USB ports, 6 USB ports, 8 USB ports, 10 USB ports and 12 USB ports.

USB 2.0 Controller
Select Enabled to activate the onboard USB2.0 controller. The options are En- abled and Disabled.

Legacy USB Support
Select Enabled to use Legacy USB devices. If this item is set to Auto, Legacy USB support will be automatically enabled if a legacy USB device is installed on the motherboard, and vise versa. The settings are Disabled, Enabled and Auto.

BIOS EHCI Hand-Off
Select Enabled to enable BIOS Enhanced Host Controller Interface support to provide a workaround solution for an operating system that does not have EHCI Hand-Off support. When enabled, the EHCI Interface will be changed from the BIOS-controlled to the OS-controlled. The options are Disabled and Enabled.

XIDE/Floppy Configuration
When this submenu is selected, the AMI BIOS automatically detects the presence of the IDE devices and displays the following items:

Floppy A
This feature allows the user to select the type of floppy drive connected to the sys- tem as specified. The options are Disabled, 360KB 5 1/4", 1.2MB 5 1/4", 720KB 3 1/2", 1.44MB 3 1/2" and 2.88MB 3 1/2". The default setting for Floppy A is 1.44MB 3 1/2", and for Floppy B is Disabled.

SATA#1 Configuration
If Compatible is selected, it sets SATA#1 to legacy compatibility mode, while se- lecting Enhanced sets SATA#1 to native SATA mode. The options are Disabled, Compatible and Enhanced.

Configure SATA#1 as
This feature allows the user to select the drive type for SATA#1. The options are IDE, RAID and AHCI. (When the option-RAID is selected, the item-ICH RAID Code Base will appear. When the option-AHCI is selected, the item-SATA AHCI will be available.)

ICH RAID Code Base (This feature is available when the option-RAID is selected)
Select Intel to enable Intel's SATA RAID firmware to configure Intel's SATA RAID settings. Select Adaptec to enable Adaptec's SATA RAID firmware to configure Adaptec's SATA RAID settings. The options are Intel and Adaptec.

SATA AHCI (This feature is available when the option-AHCI is selected)
Select Enable to enable the function of Serial ATA Advanced Host Interface. (Take caution when using this function. This feature is for advanced programmers only.) The options are Enabled and Disabled. If the option-Enabled is selected, the following item will display.

SATA#2 Configuration (This feature is available when the option-IDE is selected)
Selecting Enhanced will set SATA#2 to native SATA mode. The options are

Disabled, and Enhanced.

IDE Detect Timeout (sec)
Use this feature to set the time-out value for the BIOS to detect the ATA, ATAPI devices installed in the system. The options are 0 (sec), 5, 10, 15, 20, 25, 30, and 35.

Primary IDE Master/Slave, Secondary IDE Master/Slave, Third IDE Master, and Fourth IDE Master
These settings allow the user to set the parameters of Primary IDE Master/Slave, Secondary IDE Master/Slave, Third and Fourth IDE Master slots. Hit <Enter> to activate the following submenu screen for detailed options of these items. Set the correct configurations accordingly. The items included in the submenu are:

Type
Select the type of device connected to the system. The options are Not Installed,
Auto, CD/DVD and ARMD.

LBA/Large Mode
LBA (Logical Block Addressing) is a method of addressing data on a disk drive. In the LBA mode, the maximum drive capacity is 137 GB. For drive capacities over 137 GB, your system must be equipped with a 48-bit LBA mode addressing.
If not, contact your manufacturer or install an ATA/133 IDE controller card that supports 48-bit LBA mode. The options are Disabled and Auto.

Block (Multi-Sector Transfer)
Block Mode boosts the IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if Block Mode is not used. Block Mode allows transfers of up to 64 KB per interrupt. Select Disabled to allow data to be transferred from and to the device one sector at a time. Select Auto to allow data transfer from and to the device occur multiple sectors at a time if the device supports it. The options are Auto and Disabled.

PIO Mode
The IDE PIO (Programmable I/O) Mode programs timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases. The options are Auto, 0, 1, 2, 3, and 4.

Select Auto to allow the AMI BIOS to automatically detect the PIO mode. Use this value if the IDE disk drive support cannot be determined.

Select 0 to allow the AMI BIOS to use PIO mode 0. It has a data transfer rate of 3.3 MBs.

Select 1 to allow the AMI BIOS to use PIO mode 1. It has a data transfer rate of 5.2 MBs.

Select 2 to allow the AMI BIOS to use PIO mode 2. It has a data transfer rate of 8.3 MBs.

Select 3 to allow the AMI BIOS to use PIO mode 3. It has a data transfer rate of 11.1 MBs.

Select 4 to allow the AMI BIOS to use PIO mode 4. It has a data transfer band- width of 32-Bits. Select Enabled to enable 32-Bit data transfer.

DMA Mode

Select Auto to allow the BIOS to automatically detect IDE DMA mode when the
IDE disk drive support cannot be determined.
Select SWDMA0 to allow the BIOS to use Single Word DMA mode 0. It has a data transfer rate of 2.1 MBs.

Select SWDMA1 to allow the BIOS to use Single Word DMA mode 1. It has a data transfer rate of 4.2 MBs.

Select SWDMA2 to allow the BIOS to use Single Word DMA mode 2. It has a data transfer rate of 8.3 MBs.

Select MWDMA0 to allow the BIOS to use Multi Word DMA mode 0. It has a data transfer rate of 4.2 MBs.

Select MWDMA1 to allow the BIOS to use Multi Word DMA mode 1. It has a data transfer rate of 13.3 MBs.

Select MWDMA2 to allow the BIOS to use Multi-Word DMA mode 2. It has a data transfer rate of 16.6 MBs.

Select UDMA0 to allow the BIOS to use Ultra DMA mode 0. It has a data transfer rate of 16.6 MBs. It has the same transfer rate as PIO mode 4 and Multi Word DMA mode 2.

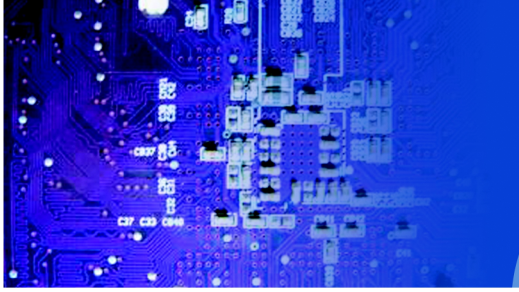
Select UDMA1 to allow the BIOS to use Ultra DMA mode 1. It has a data transfer rate of 25 MBs.

Select UDMA2 to allow the BIOS to use Ultra DMA mode 2. It has a data transfer rate of 33.3 MBs.

Select UDMA3 to allow the BIOS to use Ultra DMA mode 3. It has a data transfer rate of 66.6 MBs.

Select UDMA4 to allow the BIOS to use Ultra DMA mode 4. It has a data transfer rate of 100 MBs.

Select UDMA5 to allow the BIOS to use Ultra DMA mode 5. It has a data transfer rate of 133 MBs.



Select UDMA6 to allow the BIOS to use Ultra DMA mode 6. It has a data transfer rate of 133 MBs. The options are Auto, SWDMAn, MWDMAn, and UDMAn.

S.M.A.R.T. For Hard disk drives

Self-Monitoring Analysis and Reporting Technology (SMART) can help predict impending drive failures. Select Auto to allow the AMI BIOS to automatically de- tect hard disk drive support. Select Disabled to prevent the AMI BIOS from using the S.M.A.R.T. Select Enabled to allow the AMI BIOS to use the S.M.A.R.T. to support hard drive disk. The options are Disabled, Enabled, and Auto.

32Bit Data Transfer

Select Enable to enable the function of 32-bit IDE data transfer. The options are Enabled and Disabled.

XPCI/PnP Configuration

Clear NVRAM

This feature clears the NVRAM during system boot. The options are No and Yes.

Plug & Play OS

Selecting Yes allows the OS to configure Plug & Play devices. (This is not required for system boot if your system has an OS that supports Plug & Play.) Select No to allow the AMI BIOS to configure all devices in the system.

PCI Latency Timer

This feature sets the latency Timer of each PCI device installed on a PCI bus. Select 64 to set the PCI latency to 64 PCI clock cycles. The options are 32, 64, 96, 128,160, 192, 224 and 248.

PCI IDE BusMaster

When enabled, the BIOS uses PCI bus mastering for reading/writing to IDE drives. The options are Disabled and Enabled.

PCI SERR Function

The feature allows SERR errors detected in PCI slots to be sent (forwarded) to the BIOS DMI Event Log for the user to review. The options are Enabled and Disabled.

Slot 1 PCI 33MHz, Slot 2 PCI 33MHz, Slot 3 PCIE X4 in X8 Slot, Slot 4 PCIE X8, Slot 5 PCIE X8, Slot 6 PCIE X8 in X16 slot

This feature allows you to Enable or Disable any of the PCI slots. The options are Enable and Disable.

Load Onboard LAN1 Option ROM/Load Onboard LAN2 Option ROM

Select Enabled to enable the onboard LAN1 or LAN2 Option ROM. This is to boot computer using a network interface. The options are Enabled and Disabled.

XSuper IO Device Configuration

Uart 2 of Hermon as This feature sets COM2 as a normal serial port or a virtual COM port for SOL. The options are SOL and COM.

Serial Port1 Address/ Serial Port2 Address

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 1 and Serial Port 2. Select Disabled to prevent the serial port from accessing any system resources. When this option is set to Disabled, the serial port physically becomes unavailable. Select 3F8/IRQ4 to allow the serial port to use 3F8 as its I/O port address and IRQ 4 for the interrupt address. The options for Serial Port1 are Disabled, 3F8/IRQ4, 3E8/IRQ4, 2E8/IRQ3. The options for Serial Port2 are Disabled, 2F8/IRQ3, 3E8/IRQ4, and 2E8/IRQ3.

XRemote Access Configuration

Remote Access
This allows the user to enable the Remote Access feature. The options are Disabled and Enabled. If Remote Access is set to Enabled, the following items will display:

Serial Port Number
This feature allows the user decide which serial port to be used for Console Redi- rection. The options are COM 1 and COM 2.

Base Address, IRQ
This item displays the based address and IRQ of the serial port specified above. The options are COM 1 and COM 2.

Serial Port Mode
This feature allows the user to set the serial port mode for Console Redirection. The options are 115200 8, n 1; 57600 8, n, 1; 38400 8, n, 1; 19200 8, n, 1; and 9600 8, n, 1.

Flow Control
This feature allows the user to set the flow control for Console Redirection. The options are None, Hardware, and Software.

Redirection After BIOS POST
Select Disabled to turn off Console Redirection after Power-On Self-Test (POST). Select Always to keep Console Redirection active all the time after POST. (Note: This setting may not be supported by some operating systems.) Select Boot Loader to keep Console Redirection active during POST and Boot Loader. The options are Disabled, Boot Loader, and Always.

Terminal Type
This feature allows the user to select the target terminal type for Console Redirec- tion. The options are ANSI, VT100, and VT-UTF8.

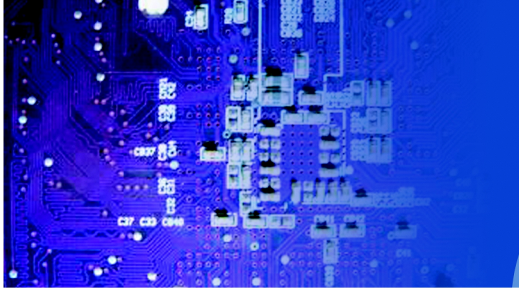
VT-UTF8 Combo Key Support
A terminal keyboard definition that provides a way to send commands from a remote console. Available options are Enabled and Disabled.

Sredir Memory Display Delay
This feature defines the length of time in seconds to display memory information. The options are No Delay, Delay 1 Sec, Delay 2 Sec, and Delay 4 Sec.

XHardware Health Monitor
This feature allows the user to monitor system health and review the status of each item as displayed.

CPU Overheat Alarm
This option allows the user to select the CPU Overheat Alarm setting which de- termines when the CPU OH alarm will be activated to provide warning of possible CPU overheat.

Warning! 1.Any temperature that exceeds the CPU threshold tempera- ture predefined by the CPU manufacturer may result in CPU overheat or system instability. When the CPU temperature reaches this predefined threshold, the CPU and system cooling fans will run at full speed. 2. To avoid possible system overheating, please be sure to provide adequate airflow to your system.



The options are:

o The Early Alarm: Select this setting if you want the CPU overheat alarm (includ- ing the LED and the buzzer) to be triggered as soon as the CPU temperature reaches the CPU overheat threshold as predefined by the CPU manufacturer.
o The Default Alarm: Select this setting if you want the CPU overheat alarm (including the LED and the buzzer) to be triggered when the CPU temperature reaches about 5oC above the threshold temperature as predefined by the CPU manufacturer to give the CPU and system fans additional time needed for CPU and system cooling. In both the alarms above, please take immediate action as shown below.

CPU Temperature/System Temperature
This feature displays current temperature readings for the CPU and the System. The following items will be displayed for your reference only:

CPU Temperature
The CPU Temperature feature will display the CPU temperature status as detected by the BIOS:

Low - This level is considered as the 'normal' operating state. The CPU temperature is well below the CPU 'Temperature

Tolerance'. The motherboard fans and CPU will run normally as configured in the BIOS (Fan Speed Control).

User intervention: No action required.

Medium - The processor is running warmer. This is a 'precautionary' level and generally means that there may be factors contributing to this condition, but the CPU is still within its normal operating state and below the CPU 'Temperature Tolerance'. The motherboard fans and CPU will run normally as configured in the BIOS. The fans may adjust to a faster speed depending on the Fan Speed Control settings.

User intervention: No action is required. However, consider checking the CPU fans and the chassis ventilation for blockage.

High - The processor is running hot. This is a 'caution' level since the CPU's 'Tem- perature Tolerance' has been reached (or has been exceeded) and may activate an overheat alarm. The system may shut down if it continues for a long period to prevent damage to the CPU.

User intervention: If the system buzzer and Overheat LED has activated, take action immediately by checking the system fans, chassis ventilation and room temperature to correct any problems.

Notes:

The CPU thermal technology that reports absolute temperatures (Celsius/Fahr- enheit) has been upgraded to a more advanced feature by Intel in its newer processors. The basic concept is each CPU is embedded by unique temperature information that the motherboard can read. This 'Temperature Threshold' or 'Tem- perature Tolerance' has been assigned at the factory and is the baseline on which the motherboard takes action during different CPU temperature conditions (i.e., by increasing CPU Fan speed, triggering the Overheat Alarm, etc). Since CPUs can have different 'Temperature Tolerances', the installed CPU can now send informa- tion to the motherboard what its 'Temperature Tolerance' is, and not the other way around. This results in better CPU thermal management.

Supermicro has leveraged this feature by assigning a temperature status to certain thermal conditions in the processor (Low, Medium and High). This makes it easier for the user to understand the CPU's temperature status, rather than by just simply seeing a temperature reading (i.e., 25oC).

The information provided above is for your reference only. For more information on thermal management, please refer to Intel's Web site at www.Intel.com.

System Temperature: The system temperature will be displayed (in degrees in Celsius and Fahrenheit) as it is detected by the BIOS.

Fan Speed Readings
This feature displays the fan speed readings from Fan1 through Fan8.

Fan Speed Control Modes
This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase, and vice versa. Select Workstation if your system is used as a Workstation. Select Server if your system is used as a Server. Select Disabled to disable the fan speed control function and allow the onboard fans to constantly run at full speed. The Options are:

Disabled, 4-pin (Server), 4-pin (Workstation), 4-pin (Quiet), 4-pin (Super Quiet).

Voltage Readings
The following voltage readings will be displayed.

CPU0 Vcore, CPU1 Vcore, 1.5V, 5V, 5VSB, 12V, -12V, 3.3Vcc, 3.3VSB, VBAT and Vtt

XACPI Configuration
Use this feature to configure Advanced Configuration and Power Interface (ACPI) power management settings for your system.

High Performance Event Timer
Select Enabled to activate the High Performance Event Timer (HPET) that produces periodic interrupts at a much higher frequency than a Real-time Clock (RTC) does in synchronizing multimedia streams, providing smooth playback and reducing the de- pendency on other timestamp calculation devices, such as an x86 RDTSC Instruc- tion embedded in the CPU. The High Performance Event Timer is used to replace the 8254 Programmable Interval Timer. The options are Enabled and Disabled.

USB Device Wakeup
Select Enable to "wake-up" the system via a USB device when the system is in S3 or S4 State. The options are Enabled and Disabled.

PS2 KB/MS Wake Up
Select Enable to "wake-up" the system using either the PS2 keyboard or mouse (if equipped) when the system is in S3 (Sleep) or S4 (Hibernate) state. The options are Enabled and Disabled.

ACPI Aware O/S
Enable ACPI support if it is supported by the OS to control ACPI through the Operat- ing System. Otherwise, disable this feature. The options are Yes and No.

ACPI APIC Support
Select Enabled to include the ACPI APIC Table Pointer in the RSDT (Root System Description Table) pointer list. The options are Enabled and Disabled.

APIC ACPI SCI IRQ
When this item is set to Enabled, APIC ACPI SCI IRQ is supported by the system. The options are Enabled and Disabled.

Headless Mode
This feature is used to enable system to function without a keyboard, monitor and/ or mouse attached The options are Enabled and Disabled.

ACPI Version Features
The options are ACPI v1.0, ACPI v2.0 and ACPI v3.0. Please refer to ACPI's website for further explanation: http://www.acpi.info/
.
XIPMI Configuration
Intelligent Platform Management Interface (IPMI) is a set of common interfaces that IT administrators can use to monitor system health and to manage the system as a whole. For more information on the IPMI specifications, please visit Intel's website at www.intel.com.

IPMI Firmware Revision
This item displays the current IPMI firmware revision.

Status of BMC
Baseboard Management Controller (BMC) manages the interface between system management software and platform hardware. This is an informational feature which returns the status code of the BMC micro controller.

XView BMC System Event Log
This feature displays the BMC System Event Log (SEL). It shows the total number of entries of BMC System Events. To view an event, select an Entry Number and pressing <Enter> to display the information as shown in the screen.

o Total Number of Entries
o SEL Entry Number
o SEL Record ID
o SEL Record Type
o Timestamp, Generator ID
o Event Message Format User
o Event Sensor Type
o Event Sensor Number,
o Event Dir Type
o Event Data

Clear BMC System Event Log

Select OK and press the <Enter> key to clear the BMC system log. Select Cancel to keep the BMC System log. The options are OK and Cancel.

Caution: Any cleared information is unrecoverable. Make absolutely sure that you no longer need any data stored in the log before clearing the BMC Event Log.

XSet LAN Configuration

Set this feature to configure the IPMI LAN adapter with a network address as shown in the following graphics.

Channel Number - Enter the channel number for the SET LAN Config com- mand. This is initially set to [01]. Press "+" or "-" on your keyboard to change the Channel Number.

Channel Number Status - This feature returns the channel status for the Channel Number selected above: "Channel Number is OK" or "Wrong Channel Number".

IP Address Source
Select the source of this machine's IP address. If Static is selected, you will need to know and enter manually the IP address of this machine below. If DHCP is selected, the BIOS will search for a DHCP (Dynamic Host Configuration Protocol) server in the network it is attached to, and request the next available IP address. The options are DHCP and Static.

The following items are assigned IP addresses automatically if DHCP is selected under IP Address Source above:

IP Address
Enter the IP address for this machine. This should be in decimal and in dotted quad form (i.e., 192.168.10.253). The value of each three-digit number separated by dots should not exceed 255 as shown in the screen below.

Subnet Mask
Subnet masks tell the network which subnet this machine belongs to. The value of each three-digit number separated by dots should not exceed 255.

Gateway Address
This is the IP address of the gateway in the network. This is usually a router.

Mac Address
The BIOS will automatically enter the Mac address of this machine; however it may be over-ridden. Mac addresses are 6 two-digit hexadecimal numbers (Base 16, 0 ~ 9, A, B, C, D, E, F) separated by dots. (i.e., 00.30.48.D0.D4.60).

XSET PEF Configuration

PEF Support
Select Enabled to enable the function of Platform Event Filter (PEF) which will interpret BMC events and perform actions based on pre-determined settings or events and performs actions based on pre-determined settings or 'traps' under IPMI 1.5 specifications. For example, powering the system down or sending an alert when a triggering event is detected. The default is Disabled.

The following will appear if PEF Support is set to Enabled.

PEF Action Global Control (Available if the item-PEF Support is enabled)

These are the different actions based on BMC events. The options are Alert, Power Down, Reset System, Power Cycle, OEM Action, Diagnostic Interface.
Alert Startup Delay (Available if the item-PEF Support is enabled)
This feature inserts a delay during startup for PEF alerts. The options are En- abled and Disabled.

Startup Delay (Available if the item-PEF Support is enabled)

This feature enables or disables startup delay. The options are Enabled and Disabled.

BMC Watch Dog Timer Action

Event Message for PEF Action (Available if the item-PEF Support is enabled)

This enables of disables Event Messages for PEF action. Refer to Table 24.6 of the IPMI 1.5 Specification for more information at www.intel.com. The options are Disabled and Enabled.

Allows the BMC to reset or power down the system if the operating system hangs or crashes. The options are Disabled, Reset System, Power Down, Power Cycle.

BMC Watch Dog TimeOut [Min:Sec]
This option appears if BMC Watch Dog Timer Action (above) is enabled. This is a timed delay in minutes or seconds, before a system power down or reset after an operating system failure is detected. The options are [5 Min], [1 Min], [30 Sec], and [10 Sec].

XEvent Log Configuration

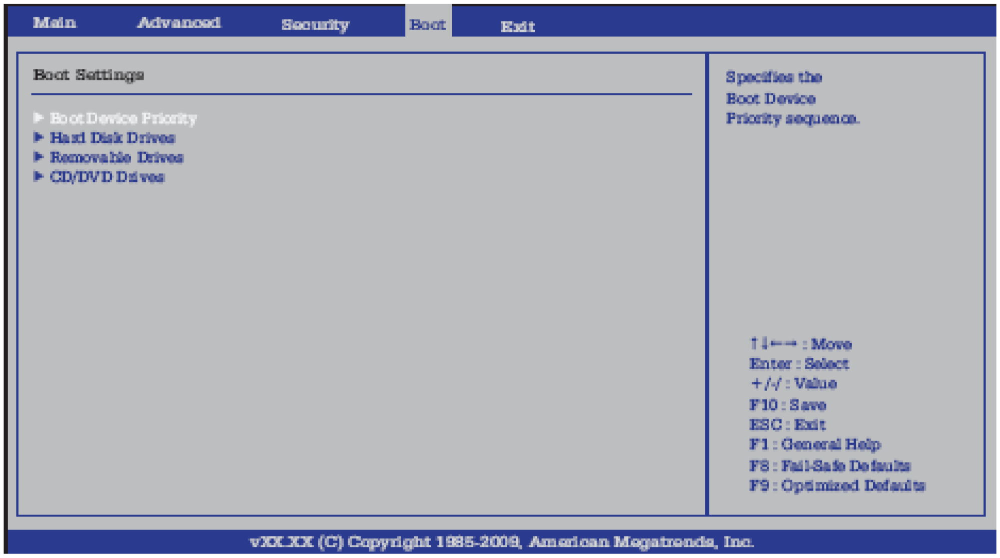
View Event Log
Use this option to view the System Event Log.
Mark all events as read
This option marks all events as read. The options are OK and Cancel.

Clear event log
This option clears the Event Log memory of all messages. The options are OK and Cancel.

PCI Error Log
Use this option to enable PCI error (PERR) logging. The options are Yes and No.

7-4 Security Settings

The AMI BIOS provides a Supervisor and a User password. If you use both pass- words, the Supervisor password must be set first.


Main
Advanced
Security
Boot
Exit
Boot Settings
▸ Boot Device Priority
▸ Hard Disk Drives
▸ Removable Drives
▸ CD/DVD Drives
↑↓←→ : Move
Enter : Select
+/-/ : Value
F10 : Save
ESC : Exit
F1 : General Help
F8 : Fail-Safe Defaults
F9 : Optimized Defaults

Specifies the Boot Device Priority sequence.

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Supervisor Password
This item indicates if a Supervisor password has been entered for the system. "Not Installed" means a Supervisor password has not been used.

User Password
This item indicates if a user password has been entered for the system. "Not In- stalled" means that a user password has not been used.

Change Supervisor Password
Select this feature and press <Enter> to access the submenu, and then type in a new Supervisor Password.

User Access Level (Available when Supervisor Password is set as above) Available options are Full Access: grants full User read and write access to the

Setup Utility, View Only: allows access to the Setup Utility but the fields cannot be changed, Limited: allows only limited fields to be changed such as Date and Time, No Access: prevents User access to the Setup Utility.

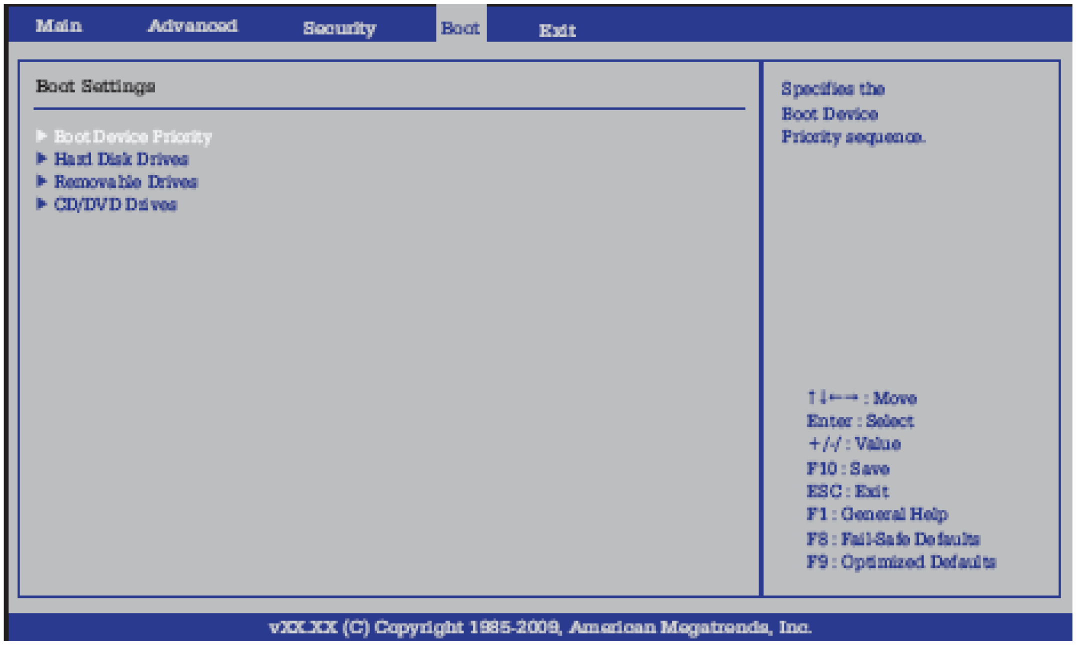
Change User Password
Select this feature and press <Enter> to access the submenu , and then type in a new User Password.
Clear User Password (Available only when User Password has been set)
This item allows you to clear a user password after it has been entered.

Password Check
This item allows you to check a password after it has been entered. The options are Setup and Always.

Boot Sector Virus Protection
When Enabled, the AMI BIOS displays a warning when any program (or virus) is- sues a Disk Format command or attempts to write to the boot sector of the hard disk drive. The options are Enabled and Disabled.

7-5 Boot Configuration

Use this feature to configure boot settings.



Boot Settings

- ▸ Boot Device Priority
- ▸ Hard Disk Drives
- ▸ Removable Drives
- ▸ CD/DVD Drives

Specifies the Boot Device Priority sequence.

↑↓←→ : Move
Enter : Select
+/-/ : Value
F10 : Save
ESC : Exit
F1 : General Help
F8 : Fail-Safe Defaults
F9 : Optimized Defaults

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XBoot Device Priority
This feature allows the user to specify the sequence of priority for the Boot Device. The settings are 1st boot device, 2nd boot device, 3rd boot device, 4th boot device, 5th boot device and Disabled.
o 1st Boot Device - [USB: XXXXXXXXX]
o 2nd Boot Device - [CD/DVD: XXXXXXXXX]

XHard Disk Drives
This feature allows the user to specify the boot sequence from all available hard disk drives. The settings are Disabled and a list of all hard disk drives that have been detected (i.e., 1st Drive, 2nd Drive, 3rd Drive, etc).
o 1st Drive - [SATA: XXXXXXXXX]

XRemovable Drives
This feature allows the user to specify the boot sequence from available Removable Drives. The settings are 1st boot device, 2nd boot device, and Disabled.
o 1st Drive - [USB: XXXXXXXXX]
o 2nd Drive

XCD/DVD Drives
This feature allows the user to specify the boot sequence from available CD/DVD Drives (i.e., 1st Drive, 2nd Drive, etc).4-6
Exit Options. Select the Exit tab from the AMI BIOS Setup Utility screen to enter the Exit BIOS Setup screen.

7-6 Exit Options

Select the Exit tab from the AMI BIOS Setup Utility screen to enter the Exit BIOS Setup screen.

Save Changes and Exit

When you have completed the system configuration changes, select this option to leave the BIOS Setup Utility and reboot the computer, so the new system con- figuration parameters can take effect. Select Save Changes and Exit from the Exit menu and press <Enter>.

Discard Changes and Exit

Select this option to quit the BIOS Setup without making any permanent changes to the system configuration, and reboot the computer. Select Discard Changes and Exit from the Exit menu and press <Enter>.

Discard Changes

Select this option and press <Enter> to discard all the changes and return to the

AMI BIOS Utility Program.

Load Optimal Defaults

To set this feature, select Load Optimal Defaults from the Exit menu and press

<Enter>. Then, select OK to allow the AMI BIOS to automatically load Optimal De- faults to the BIOS Settings. The Optimal settings are designed for maximum system performance, but may not work best for all computer applications.

Load Fail-Safe Defaults

To set this feature, select Load Fail-Safe Defaults from the Exit menu and press

<Enter>. The Fail-Safe settings are designed for maximum system stability, but not for maximum performance.

Appendix A

BIOS Post Error Code
During the POST (Power-On Self-Test) routines, which are performed each time the system is powered on, errors may occur.

Non-fatal errors are those which, in most cases, allow the system to continue the boot-up process. The error messages normally appear on the screen.

Fatal errors are those which will not allow the system to continue the boot-up procedure. If a fatal error occurs, you should consult with your system manufac- turer for possible repairs.

These fatal errors are usually communicated through a series of audible beeps. The numbers on the fatal error list correspond to the number of beeps for the corresponding error.

A-1 BIOS Error Beep Codes

Appendix B Installing Windows

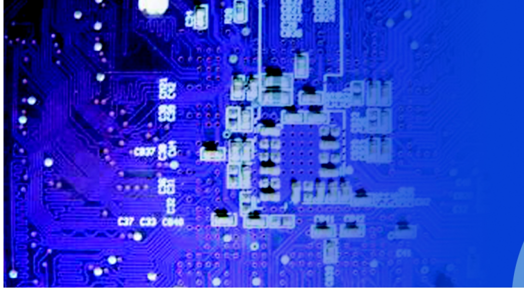
After all hardware components have been installed, you must first configure Intel South Bridge RAID Settings before you install the Windows OS and other software drivers. To configure RAID settings, please refer to RAID Configuration User Guides posted on our website at www.supermicro.com/support/manuals.

B-1 Installing Windows to a RAID System

1. Insert Microsoft's Windows Setup CD in the CD drive and the system will start booting up from CD.
2. Press the <F6> key when the message "Press F6 if you need to install a third party SCSI or RAID driver" displays.
3. When the Windows setup screen appears, press "S" to specify additional device(s).
4. Insert the driver diskette "Intel AA RAID XP/2003/2008/Vista Driver for ICH10R" into the floppy drive and press the <Enter> key.
5. Choose the Intel(R) ICH10R SATA RAID Controller from the list indicated in the Windows setup screen, and press the <Enter> key.
6. Press the <Enter> key to continue the installation process. (If you need to specify any additional devices to be installed, do it at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.
7. From the Windows OS setup screen, press the <Enter> key. The Windows setup will automatically load all device files and then continue the installation.
8. After the Windows installation is completed, the system will automatically reboot.

B-2 Installing Windows to a Non-RAID System

1. Insert Microsoft's Windows setup CD in the CD drive and the system will start booting up from CD.
2. Continue with the OS installation. The Windows OS Setup screen will display.
3. From the Windows setup screen, press the <Enter> key. The Windows setup will automatically load all device files and then continue with the installation.
4. After the Windows installation is complete, the system will automatically reboot.
5. Insert the Supermicro setup CD that came with your motherboard into the CD drive during system boot, and the main screen will display.



Appendix C System Specifications

Processors
Two Intel® 5500 Series processors in LGA1366 sockets

Chipset
Intel 5500/ICH10R

BIOS
32 Mb AMI SPI Flash ROM

Memory Capacity
Six DIMM slots that can support up to 24 GB of ECC registered DDR3- 1333/1066/800 SDRAM

Serial ATA Controller
Intel ICH10R on-chip controller to support six 3 Gb/s Serial ATA (RAID 0, 1)

Drive Bays
One internal SATA hard drive. The internal drive is not hot-swappable.

PCI Expansion
One PCI-Express card (with pre-installed riser card)

Serverboard
Dimensions: 12 x 10 in (305 x 254 mm)

Chassis
Mini 1U Rackmount

Dimensions: (WxHxD)
17.3 x 1.7 x 14.5 in. (439 x 43 x 368 mm)

Weight
Gross Weight: 18 lbs. (8.2 kg.)

System Cooling
Three (3) 4-cm counter-rotating fans

System Input Requirements
AC Input Voltage: 100-240 VAC
Rated Input Current: 7A ~ 3A max. (100-240V) Rated Input Frequency: 50 to 60 Hz

Power Supply
Rated Output Power: 520W (Part# PWS-521-1H)
Rated Output Voltages: +3.3V (16A), +5V (20A), +12V (39A), -12V (0.5A), +5Vsb (3A)

Operating Environment
Operating Temperature: 0º to 35º C (32º to 95º F)

Non-operating Temperature: -40º to 70º C (-40º to 158º F) Operating Relative Humidity: 20% to 95% (non-condensing) Non-operating Relative Humidity: 5 to 95% (non-condensing)

Regulatory Compliance

Electromagnetic Emissions: FCC Class A, EN 55022 Class A, EN 61000-3-2/-3-3, CISPR 22 Class A